FILE NO. SM – CTV– O – 019

TV/DVD COMBO

SERVICE MANUAL

MODEL NO. GT2015DV
CHASSIS NO. CN-12C2 +
DVD127/128/129

Please read this manual carefully before service

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SPECIFICATIONS (FOR TV UNIT)

Model Number		GT2015DV
	Color system	NTSC3.58
	Sound system	M
Video system		NTSC
Receiving channel	VHF	2~13
	UHF	14~69
	CABLE	MID BAND: A-8~A-1, A~I SUPER BAND: J~W HYPER BAND: AA~ZZ, AAA, BBB ULTRA BAND: 65~94, 100~125
Channels preset		181
Antenna input		75 Ω (unbalanced)
Picture tube Effective screen dimensions (Approx.)		406×305mm (15.98×12.04 in.)
Audio output (THD≤7%)		2.0W+2.0W
Power source		~120V AC, 60Hz
Weight (Approx.)		27.7kg
Dimensions (W×H×D) (Approx.)		512×522×510mm (20.16×20.55×20.08 in.)
Rated power consumption ~120V AC, 60Hz		120W

SPECIFICATIONS (FOR DVD UNIT)

Item	Specifications
Horizontal resolution	≥450 lines
Video amplitude	1±0.2Vp-p（Load: 75 Ω）
Brightness S/N ratio	≥55dB
Audio output level	1.0-2.0Vrms(Load: 10K)
Audio signal-to-noise ratio	≥90dB
Audio frequency response	20Hz～20KHz ±3dB
Audio distortion and noise	≤60dB
Reliability	MTBF 0 1≥5000h
Laser	Wave length of semiconductor laser: 650nm±15nm (for DVD) 790±20nm (for CD)
Crosstalk (fundamental)	≥70dB
Unbalance of 1KHz channel	≤1.5dB

Designs and specifications are subject to change without notice.

SERVICE SAFETY INSTRUCTIONS (FOR TV UNIT)

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" INSTRUCTION BELOW.

X-RAY RADIATION PRECAUTION

1. The EHT must be checked every time the TV is serviced to ensure that the CRT does not emit X-ray radiation as result of excessive EHT voltage. The maximum EHT voltage permissible in any operating circumstances must not exceed the rated value. When checking the EHT, use the High Voltage Check procedure in this manual using an accurate EHT voltmeter.
2. The only source of X-RAY radiation in this TV is the CRT. The TV minimizes X-RAY radiation, which ensures safety during normal operation. To prevent X-ray radiation, the replacement CRT must be identical to the original fitted as specified in the parts list.
3. Some components used in this TV have safety related characteristics preventing the CRT from emitting X-ray radiation. For continued safety, replacement component should be made after referring the PRODUCT SAFETY NOTICE below.
4. Service and adjustment of the TV may result in changes in the nominal EHT voltage of the CRT anode. So ensure that the maximum EHT voltage does not exceed the rated value after service and adjustment.

SAFETY PRECAUTION

WARNING: REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.

1. The TV has a nominal working EHT voltage of 25kV. Extreme caution should be exercised when working on the TV with the back removed.

1.1 Do not attempt to service this TV if you are not conversant with the precautions and procedures for working on high voltage equipment.

1.2 When handling or working on the CRT, always discharge the anode to the TV chassis before removing the anode cap in case of electric shock.

1.3 The CRT, if broken, will violently expel glass fragments. Use shatterproof goggles and take extreme care while handling.

1.4 Do not hold the CRT by the neck as this is a very dangerous practice.

2. It is essential that to maintain the safety of the customer all power cord forms be replaced exactly as supplied from factory.
3. Voltage exists between the hot and cold ground when the TV is in operation. Install a suitable isolating transformer of beyond rated overall power when servicing or connecting any test equipment for the sake of safety.
4. When replacing ICs, use specific tools or a static-proof electric iron with small power (below 35W).
5. Do not use a magnetized screwdriver when tightening or loosing the deflection yoke assembly to avoid electronic gun magnetized and decrement in convergence of the CRT.

6. When remounting the TV chassis, ensure that all guard devices, such as nonmetal control buttons, switch, insulating sleeve, shielding cover, isolating resistors and capacitors, are installed on the original place.
7. Replace blown fuses within the TV with the fuse specified in the parts list.
8. When replacing wires or components to terminals or tags, wind the leads around the terminal before soldering. When replacing safety components identified by the international hazard symbols on the circuit diagram and parts list, it must be the company–approved type and must be mounted as the original.
9. Keep wires away from high temperature components.

PRODUCT SAFETY NOTICE

CAUTION: FOR YOUR PROTECTION, THE FOLLOWING PRODUCT SAFETY NOTICE SHOULD BE READ CAREFULLY BEFORE OPERATING AND SERVICING THIS TV SET.

1. Do not slap or beat the cabinet or CRT, since this may result in fire or explosion.
2. Never allow the TV sharing a plug or socket with other large–power equipment. Doing so may result in too large load, thus causing fire.
3. Do not allow anything to rest on or roll over the power cord. Protect the power cord from being walked on, modified, cut or pinched, particularly at plugs.
4. Do not place any objects, especially heavy objects and lightings, on top of the TV set. Do not install the TV near any heat sources such as radiators, heat registers, stove, or other apparatus that produce heat.
5. Service personnel should observe the SAFETY INSTRUCTIONS in this manual during use and servicing of this TV set. Otherwise, the resulted damage is not protected by the manufacturer.
6. Many electrical and mechanical components in this chassis have special safety–related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X–ray radiation protection afforded by them cannot necessarily be obtained by using replacements rated at higher voltages or wattage, etc. Components which have these special safety characteristics in this manual and its supplements are identified by the international hazard symbols on the circuit diagram and parts list. Before replacing any of these components read the parts list in this manual carefully. Substitute replacement components which do not have the same safety characteristics as specified in the parts list may create X–ray radiation.

SAFETY SYMBOL DESCRIPTION

The lightning symbol in the triangle tells you that the voltage inside this product may be strong enough to cause an electric shock. Extreme caution should be exercised when working on the TV with the back removed.

This is an international hazard symbol, telling you that the components identified by the symbol have special safety–related characteristics.

This symbol tells you that the critical components identified by the FDA marking have special safety–related characteristics.

UL This symbol tells you that the critical components identified by the UL marking have special

safety–related characteristics.

SERVICE SAFETY INSTRUCTIONS (FOR DVD UNIT)

1. Never allow unqualified personnel to remove and service the DVD127/DVD128/DVD129 modules.
2. The unit will generate static. Extreme care should be taken when servicing the modules DVD127/ DVD128/DVD129 modules.
3. Never touch the laser pickup head.
4. When this unit is connected to the mains, do not bring your eyes into the laser pickup head or try to look into the disc tray of any of the opening. Looking into a laser may cause eyes damaged.
5. Ensure that leads of DVD127/DVD128/DVD129 are connected correctly.
6. When the unit is powered on, do not connect or disconnect the leads of DVD127/DVD128/DVD129.
7. Before power on, ensure each operating voltage coincides with the marking on the PCB and make sure no short circuit exits on PCB.
8. Do not use scratched, warped or repaired discs.

MAINTENANCE

1. Place the TV on a stable stand or base that is of adequate size and strength to prevent the TV from being accidentally tipped over, pushed off, or pulled off. Do not place the set near or over a radiator or heat register, or where it is exposed to direct sunlight.
2. Do not install the TV set in a place exposed to rain, water, excessive dust, mechanical vibrations or impacts.
3. Allow enough space (at least 10cm) between the TV and wall or enclosures for proper ventilation.
4. Slots and openings in the cabinet should never be blocked by clothes or other objects.
5. lease power off the TV set and disconnect it from the wall immediately if any abnormal phenomenon occurs, such as bad smell, belching smoke, sparkling, abnormal sound, no picture/sound/raster. Hold the plug firmly when disconnecting the power cord.
6. Unplug the TV set from the wall outlet before cleaning or polishing it. Use a dry soft cloth for cleaning the exterior of the TV set or CRT screen. Do not use liquid cleaners or aerosol cleaners.

ADJUSTMENTS (FOR TV UNIT)

SET-UP ADJUSTMENTS

The following adjustments should be made when a complete realignment is required or a new picture tube is installed.

Perform the adjustments in the following order:

1. Color purity
2. Convergence
3. White balance

Notes:

① The purity/convergence magnet assembly and rubber wedges need mechanical positioning.

② For some picture tubes, purity/ convergence adjustments are not required.

1. Color Purity Adjustment

Preparation:

Before starting this adjustment, adjust the vertical sync, horizontal sync, vertical amplitude and focus.

1. 1Face the TV set north or south.

1.2 Connect the power plug into the wall outlet and turn on the main power switch of the TV set.

1.3 Operate the TV for at least 15 minutes.

1.4 Degauss the TV set using a specific degaussing coil.

1.5 Set the brightness and contrast to maximum.

1.6 Counter clockwise rotate the R /B low brightness potentiometers to the end and rotate the green low brightness potentiometer to center.

1.7 Receive green raster pattern signals.

1.8 Loosen the clamp screw holding the deflection yoke assembly and slide it forward or backward to display a vertical green zone on the screen. Rotate and spread the tabs of the purity magnet around the neck of the CRT until the green zone is located vertically at the center of the screen.

1.9 Slowly move the deflection yoke assembly forward or backward until a uniform green screen is obtained.

1.10 Tighten the clamp screw of the assembly temporarily. Check purity of the red raster and blue raster until purities of the three rasters meet the requirement.

2. Convergence Adjustment

Preparation:

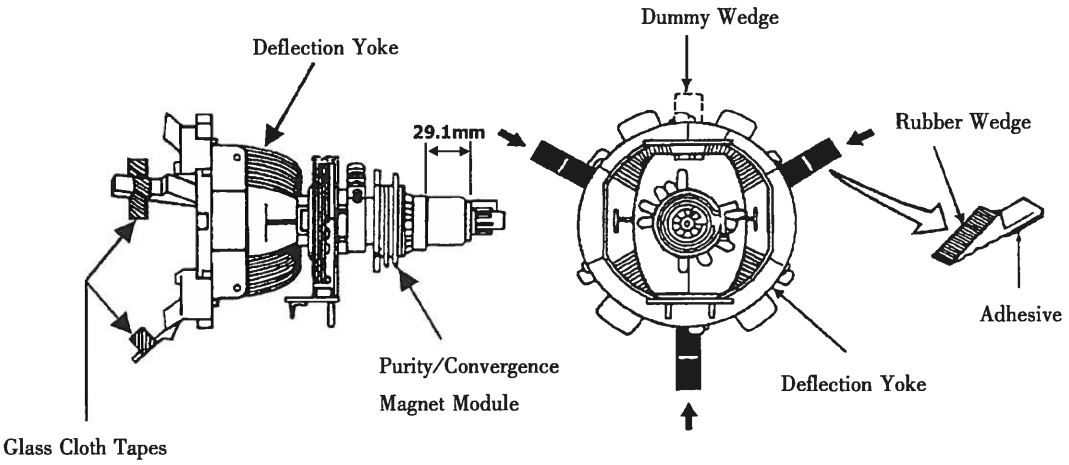
Before attempting any convergence adjustment, the TV should be operated for at least 15 minutes.

2.1 Center convergence adjustment

2.1.1 Receive dot pattern.

2.1.2 Adjust the brightness/contrast controls to obtain a sharp picture.

2.1.3 Adjust two tabs of the 4-pole magnet to change the angle between them and red and blue vertical lines are superimposed each other on the center of the screen.



2.1.4 Turn both tabs at the same time keeping the angle constant to superimpose red and blue horizontal on the center of the screen.

2.1.5 Adjust two tabs of the 6–pole magnet to superimpose red/blue line and green line.

2.1.6 Remember red and blue movement. Repeat steps 3)~5) until optimal convergence is obtained.

2.2 Circumference convergence adjustment

2.2.1 Loosen the clamp screw holding the deflection yoke assembly and allow it tilting.

2.2.2 Temporarily put the first wedge between the picture tube and deflection yoke assembly. Move front of the deflection yoke up or down to obtain better convergence in circumference. Push the mounted wedge in to fix the yoke temporarily.

2.2.3 Put the second wedge into bottom.

2.2.4 Move front of the deflection yoke to the left or right to obtain better convergence in circumference.

2.2.5 ix the deflection yoke position and put the third wedge in either upper space. Fasten the deflection yoke assembly on the picture tube.

2.2.6 Detach the temporarily mounted wedge and put it in either upper space. Fasten the deflection yoke assembly on the picture tube.

2.2.7 After fastening the three wedges, recheck overall convergence and ensure to get optimal convergence. Tighten the lamp screw holding the deflection yoke assembly.

3. White Balance Adjustment

Generally, white balance adjustment is made with professional equipment. It's not practical to get good white balance only through manual adjustment. For TVs with I2C bus control, change the bus data to adjust white balance.

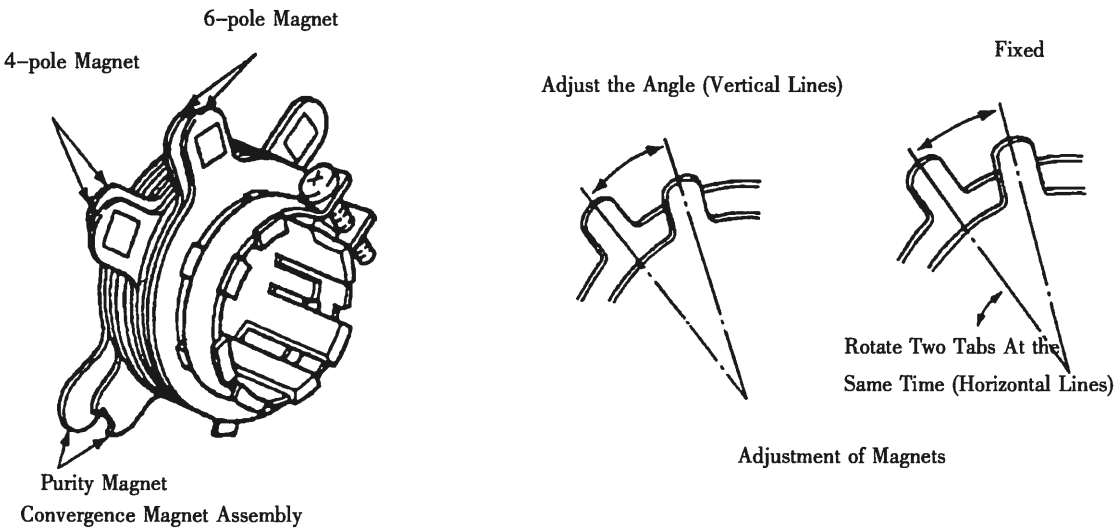
Circuit Adjustments

Preparation:

Circuit adjustments should be made only after completion of set–up adjustments.

Circuit adjustments can be performed using the adjustable components inside the TV set. For TVs with I2C bus control, first change the bus data.

1. Degaussing



Adjustment of Magnets

A degaussing coil is built inside he TV set. Each time the TV is powered on, the degaussing coil will automatically degauss the TV. If the TV is magnetized by external strong magnetic field, causing color spot on the screen, use a specific degausser to demagnetize the TV in the following ways. Otherwise, color distortion will be shown on the screen.

1.1 Power on the TV set and operate it for at least 15 minutes.

1.2 Receive red full-field pattern.

1.3 Power on the specific degausser and face it to the TV screen.

1.4 Turn on the degausser. Slowly move it around the screen and slowly take it away from the TV.

1.5 Repeat the above steps until the TV is degaussed completely.

2. Supply Voltage Adjustment

Caution: +B voltage has close relation to high voltage. To prevent X-ray radiation, set +B voltage to the rated voltage.

2.1 Make sure that the supply voltage is within the range of the rated value.

2.2 Connect a digital voltmeter to the +B voltage output terminal VD891 of the TV set. Power on the TV and set the brightness and sub-brightness to minimum.

2.3 Regulate voltage adjustment components on the power PCB to make the voltmeter read 115±1V .

3. High Voltage Inspection

Caution: No high voltage adjustment components inside the chassis. Please perform high voltage inspection in the following ways.

3.1 Connect a precise static high voltmeter to the second anode (inside the high voltage cap) of the picture tube.

3.2 Plug in the supply socket (120V, AC) and turn on the TV. Set the brightness and contrast to minimum (0μA).

3.3 The high voltage reading should be less than the EHT limitation.

3.4 Change the brightness from minimum to maximum, and ensure high voltage not beyond the limitation in any case.

Nominal EHT voltage: 27.5±1KV Limited EHT voltage: 30KV

4. Focus Adjustment

Caution: Dangerously high voltages are present inside the TV. Extreme caution should be exercised when working on the TV with the back removed.

4.1 After removing the back cover, look for the FBT on the main PCB. There should be a FCB on the FBT.

4.2 Power on the TV and preheat it for 15 min.

4.3 Receive a normal TV signal. Rotate knob of the FCB until you get a sharp picture.

5. Safety Inspection

5.1 Inspection for insulation and voltage-resistant

Perform safety test for all naked metal of the TV. Supply high voltage of 3000V AC, 50Hz (limit current of 10mA) between all naked metal and cold ground. Test every point for 3 Sec. and ensure no arcing and sparking.

5.2 Requirements for insulation resistance

Measure resistance between naked metal of the TV and feed end of the power cord to be infinity with a DC-500 high resistance meter and insulation resistance between the naked metal and degaussing coil to be over 20MΩ.

6. DESIGN/SERVICE mode

6.1 To enter the DESIGN/USER SERVICE(S) mode

Set the volume to 0. Then press the MUTE button on the remote control and on the TV at the same time for over 2 seconds. In the S mode, press the POWER button to quit the S mode.

6.2 Adjustments and Bus data

Item	Symbol Description	Bus Data
MENU.00		
V.POSITION	VERTICAL POSITION	
H.PHASE	HORIZONTAL PHASE	40
V.SIZE	VERTICAL SIZE	15
V.SC	VERTICAL S-CORRECTION	60
V,LINE	VERTICAL LINE	18
V.SIZE CMP	VERTICAL SIZE COMPENSATION	19
MENU.01		7
SUB.BIAS	SUB-BRIGHT	
SUB.CONT	SUB-CONTRAST	63
V.KILL	VERTICAL KILL	31
RF.AGC	RF AGC	0
R.BIAS	RED BIAS	20
G.BIAS	GREEN BIAS	130
B.BIAS	BLUE BIAS	130
R.DRIVE	RED DRIVE	130

G.DRIVE	GREEN DRIVE	75
B.DRIVE	BLUE DRIVE	15
MENU.02		75
SECAM B DC	SECAM B-Y	
SECAM R DC	SECAM R-Y	0
H.APC GIAN	HORIZONTAL APC GIAN	0
SYNC.KIL	SYNC KILL	0
H.BLK.L	HORIZONTAL BLANKING LEFT	0
H.BLK.R	HORIZONTAL BLANKING RIGHT	4
CROS.B/W	CROSSHATCH BLACK/WHITE	4
VIDEO.LVL	VIDEO LEVEL	0
FM.LEVEL	FM LEVEL	7
MENU.03		16
FM.MUTE	FM MUTE	
AUDIO.MUTE	AUDIO MUIE	0
VIDEO.MUTE	VIDEO MUTE	0
DEEM.TC	DE-EMPHASIS TIME CONSTANT	0
SND.TRAP	SOUND TRAP	0
MENU.04		0
SUB.COLOR	SUB COLOR	
SUB.TINT	SUB TINT	63
SUB.SHARP	SUB SHARP	32
AUTO FLESH	AUTOMATIC FLESH	63
CORING.GAN	CORING GAIN	0
C.EXT	EXTERNAL CHROMA	1
C.BYPASS	CHROMA BAND-PASS BYPASS	0
C.KILL ON	COLOR KILL ON	0
MENU.05		0
FIL.SYS	FILTER SYSTEM:SELECT Y/C FILTER MODE	
COLOR.SYS	COLOR SYSTEM	1
VOL.FIL	VOLUME FILTER	5
VIF.SYS	VIF SYSTEM	0
SIF.SYS.SW	SIF SYSTEM SWITCH	0
VIDEO.SW	VIDEO SWITCH	0
MENU.06		1
R/B G.BAL	R-Y/B-Y GAIN BALANCE	
R/B ANGLE	R-Y/B-Y ANGLE	7
CD MODE	VERTICAL COUNTDOWN MODE	9
GREY MODE	GREY MODE	0
V.SETUP	VERTICAL SETUP	0
MENU.07		1
BLANK.DEF	BLANK DEFEAT	
BRT.ABL.TH	BRIGHT ABL THRESHOLD	0
RGB TEMP	RGB TEMPERATURE SWITCH	7
BRT.ABL.DF	BRIGHT ABL DEFEAT	1

MID.STP.DF	BRIGHT MID STOP DEFEAT	0
FBP.BLK.SW	FLYBACK PULSES(HORIZONTAL)BLANKING SWITCH	0
MENU.08		0
DIGITAL.OSD	DIGITAL OSD MODE	
OSD.CONT	OSD CONTRAST CONTROL	0
OSD.CONTST	OSD CONTRAST TEST	10
OSD.H.POS	OSD HORIZONTAL POSITION	0
MENU.09		22
H.FREQ	HORIZONTAL FREQUENCY	
FM.GAIN	FM GAIN	46
C.KILL.OFF	COLOR KILL OFF	0
AUDEO.SW	AUDEO SWITCH	0
T.DISBLE	TEST MODE SWITCH DISABLE	0
MENU.10		1
G/Y ANGLE	G/Y ANGLE	
COL KIL OP	COLOR KIIIER OPERATIONAL LEVEL	0
CBCR-IN	YCBCR INPUT	7
Y-APF	YCBCR MODE,ALL PASS FILTER MODE	1
PRE SHOOT	PRE-SHOOT WIDTH	0
WPL OPE	WHITE PEAK LIMITER LEVEL OPERATE	0
DC REST	LUMA DC RESTORATION	0
BK STR STA	BLACK STRETCH START POINT	0
BK STR GAN	BLACK STRETCH START GAIN	1
MENU.11		1
OVER MD SW		
Y GAMMA	Y GAMMA START POINT	1
FSC C.SYNC	fSC C-SYNC OUTPUT	0
VBLK SW	VERTICAL BLANKING CONTROL SWITCH	1
SND TRAP	SOUND TRAP	0
HALF TONE	HALF TONE LEVEL	1
HALF T SW	HALF TONE ON/OFF SWITCH	1
TST VERSET		3
MENU.12		0
E/W DC	E/W(EAST/WEST)	
E/W AMP	E/W	
E/W TILT	E/W	
E/W C TOP	E/W	
E/W C BOTM	E/W	
MWNU.13		
E/W TEST	E/W TEST	7
HSIZE COMP	HORIZONTAL SIZE COMPENSATION	7
IF TEST 3B	3dB IF TEST	0
C.VOC SW	CHROMA VCO(VOLTAGE CONTROLLED OSCILLATOR)SWITCH	0
V.LEV ADJ	VIDEO LEVEL ADJUSTMENT	0
PRE/OVER	PRE/OVER-SHOOT ADJUSTMENT	0

OV MOD LEV		5
C.VOC ADJ	CHROMA VCO ADJUSTMENT	0
MENU.14		
VNSYNC		0
TINT.THROU	TINT THROUGH	0
HLOCK.VDET		0
MENU.15		
OPT.1CHIP	OPTION 1CHIP	1
OPT.VIDEO	OPTION VIDEO	1
OPT,AV3	OPTION AV3	1
OPT.S-VHS	OPTION S-VHS	1
OPT.YUV	OPTION YUV	0
OPT.COMB	OPTION COMB	0
OPT.BYPASS	OPTION BYPASS	0
OPT.DVD	OPTION DVD	1
MENU.16		
OPT. VM	OPTION VM	0
OPT.BLUEBK	OPTION BLUEBK	1
OPT.V-CHIP	OPTION V-CHIP	1
OPT.CCD	OPTION CCD	1
OPT.CLOCK	OPTION CLOCK	1
OPT.P-ON	OPTION	0
SRCH.SPEED	SEARCH SPEED	40
ROM .CORREC	ROM CORRECTION	0
MENU.17		
OPT.BTSC	OPTION BTSC	1
OPT.AV-INP	OPTION AV-	0
OPT.BBE	OPTION BBE	0
SUB.BASS	SUB BASS	3
SUB.TREBLE	SUB TREBLE	3
OPT.DVD-IN	OPTION DVD-INPUT	0
MENU.18		
LOUNDNESS	LOUDNESS	9
FM/AM.PRES	FM/AM PRESETTING	63
SCART.PRES	SCART PRESETTINGSCART VOLUME	39
SCART.VOL	SCART VOLUME	115
OPT.AVC	OPTION AVC	1
BBE.BASS	BBE BASS	32
BBE.TREBLE	BBE TREBLE	32

Notes:

① The data sheet may differ dependent on different models.

② The data sheet may differ dependent on different CRTs for the same model.

ADJUSTMENTS (FOR DVD UNIT)

1. Power on the unit only after ensuring DVD127/DVD128/DVD129 modules are connected correctly in accordance with the wiring diagram.
2. If the unit fails to play after power-on, repair the DVD127/DVD128/DVD129 according to the service illustration until it can read discs and has corresponding AV output.
3. Inspect audio output of the DVD127/DVD128/DVD129 in the following ways.

a. Inspect digital audio output: When playing a disc, connect a signal cable to the coaxial output terminal. Press the SETUP button on the remote control and set "AUDIO OUT" in the SETUP menu to "SPDIF/ SOURCE CODE". Then start playback with the PLAY button and the following diagram will be displayed with waveform amplitude of 0.75±0.25Vpp on the oscilloscope. After inspection, set"AUDIO OUT" to "ANALOG".

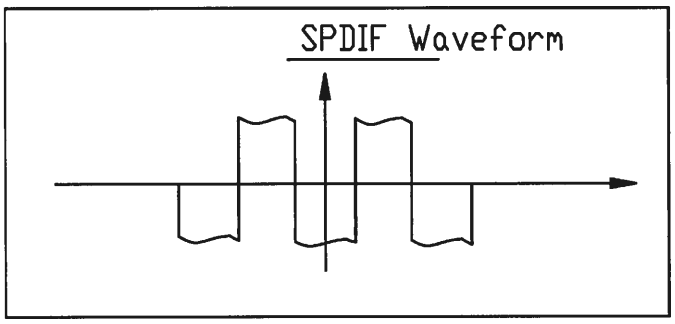


Fig. 1 Waveform Diagram of Digital Audio Signal from Coaxial Cable

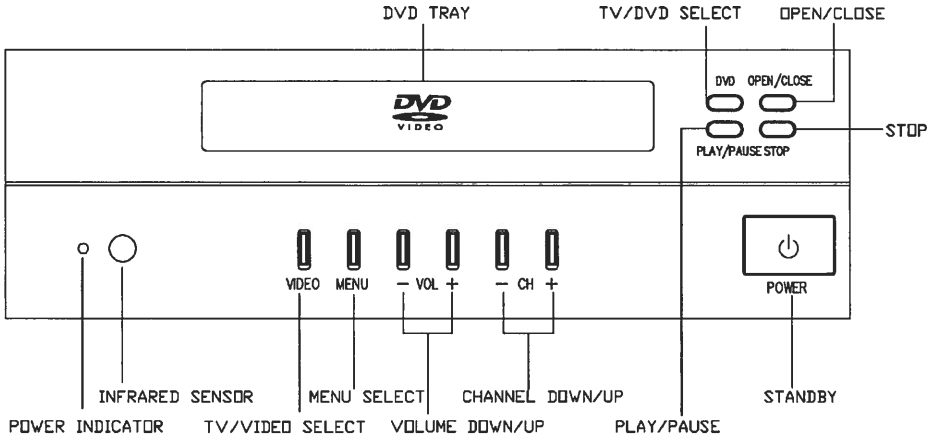
b. Connect the OUT terminal on the DVD127/DVD128/DVD129 to the IN terminal on the TV and shift the TV to the DVD mode. After power-on for several seconds, the TV should display the preset LOGO picture on the screen, which should be smooth and distort-free with normal color. Press the OPEN/CLOSE button on the remote control to open the disc tray. Place the disc on the disc tray. Press the PLAY button and play should begin after several seconds. The color and sound should be normal, and picture should be smooth and distortionless.

c. With a CD disc played, the TV should display the preset LOGO picture on the screen. The color and sound should be normal, and picture should be smooth and distortionless.

CONTROL BUTTONS

GT2015DV

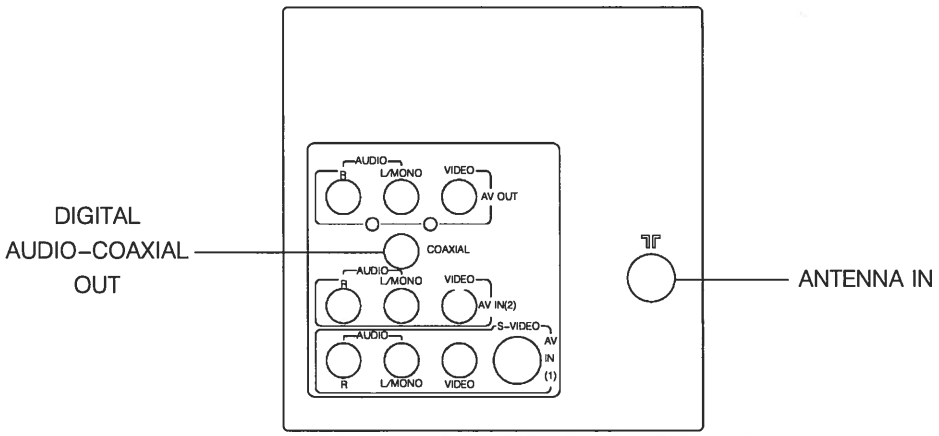
Front panel



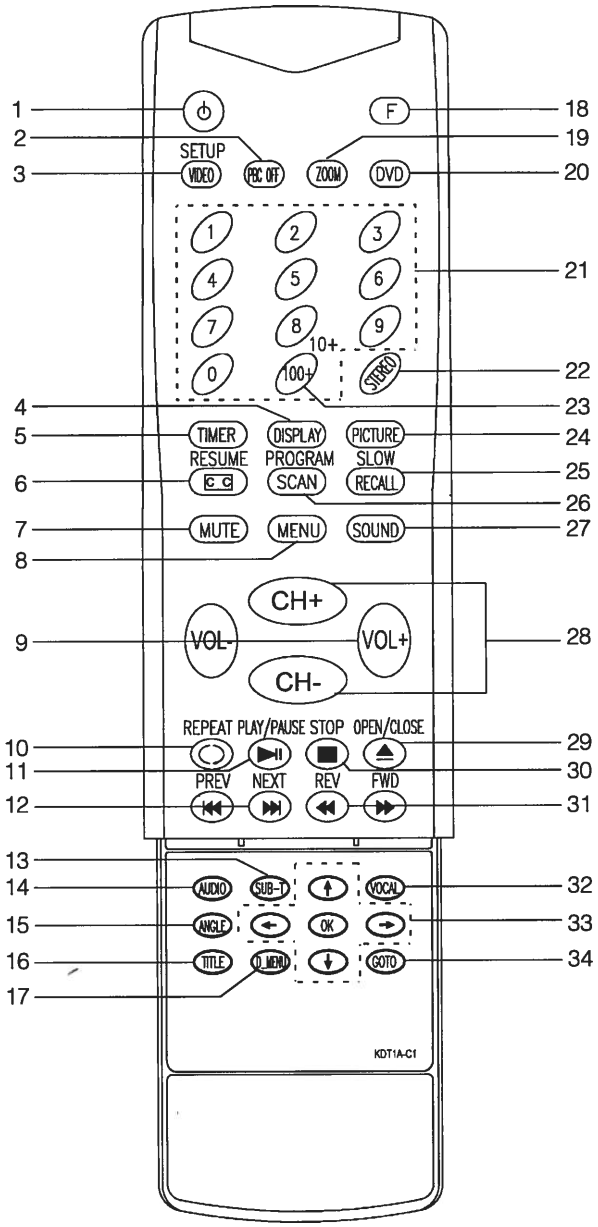
Note:

The buttons on the unit share the same functions with those buttons of the same name on the remote control. The following section of this manual will focus on operation of the remote control.

Rear panel



Remote control

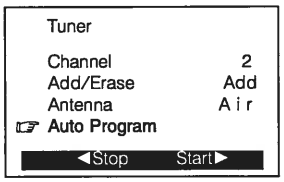


1. Remote Control Features

No.	Button	Function Description	
		TV	DVD
1		Standby	
2	**PBC OFF**	——	
*3	VIDEO (**SETUP**)	TV/Video select	Setup
4	DISPLAY	On-screen display	
5	TIMER	Time setting	
*6	(**RESUME**)	CCD/Text	Resume
7	MUTE	Mute on/off	
8	MENU	Menu select	
9	VOL-/VOL+	Volume down/up	
		To adjust items in the menus	——
10	**REPEAT**	——	Repeat
11	**PLAY/PAUSE**	——	Play/Pause
12	**PREV/NEXT**	——	Previous skip/Forward skip
13	**SUB-T**	——	Sub title
14	**AUDIO**	——	Audio
15	**ANGLE**	——	Angle select
16	**TITLE**	——	Title
17	**D_MENU**	——	DVD menu
18	F+VOL-/F+VOL+	Decrease/Increase volume by 4 levels	
	F+MUTE	Childlock	
19	**ZOOM**	——	To zoom picture
20	**DVD**	TV/DVD select	
*21	0~9	Channel number (0~9)	Number (0~9)
22	STEREO	Stereo	——
*23	100+(**10+**)	Three-digit select	Press it once to increase number by 10
24	PICTURE	Picture mode select	
*25	RECALL (**SLOW**)	Recall	Slow playback
*26	SCAN (**PROGRAM**)	Channel scan	Program
27	SOUND	Sound mode select	
28	CH-/CH+	Channel down/up To move the cursor in the menus	——
29	**OPEN/CLOSE**	——	Open/Close
30	**STOP**	——	Stop
31	**REV/FWD**	——	Fast rewind/Fast forward
32	**VOCAL**	——	Vocal
33	↑ ↓ ←→/**OK**	——	To move the cursor/To access an option
34	**GOTO**	——	Goto

2 Tuning in by the Remote Control

This section gives descriptions about adjustment of items in the Tuner menu.



1. Auto program

1) Press the CH−/+ buttons to highlight "Auto Program".
2) Press the VOL+ button, and the TV will search automatically in sequence. After auto search, the TV will store receivable channels and return to the lowest channel number.
   During auto program, press the VOL− button to stop searching.

Notes:

① After auto program, there may be some repeated channels or inferior signal received. In this case, press any of the VOL−/+, Channel Number buttons to select one of the channels. Then set Add/Erase to Erase so that pressing the CH−/+ buttons can not call up the channels. To resume the channels, set Add/Erase to Add in the way mentioned above.

② When Antenna is set to the Air mode, the TV will auto search from channel number 2 to 69; when set to the Cable mode, it will auto search from 1 to 125 (of which 2−13 channels in the Air and Cable mode are the same.)

2. Channel selection

Press the CH−/+ buttons to highlight "Channel" in the Tuner menu, and press any of the VOL−/+, Channel Number buttons to select channel numbers.

3. Add/Erases selection

Press the CH−/+ buttons to highlight "Add/Erase", and press the VOL−/+ buttons to select "Add" or "Erase" cyclically.

STRUCTURE AND CHASSIS FUNCTION DESCRIPTION

STRUCTURE BLOCK DIAGRAM (FOR TV UNIT)

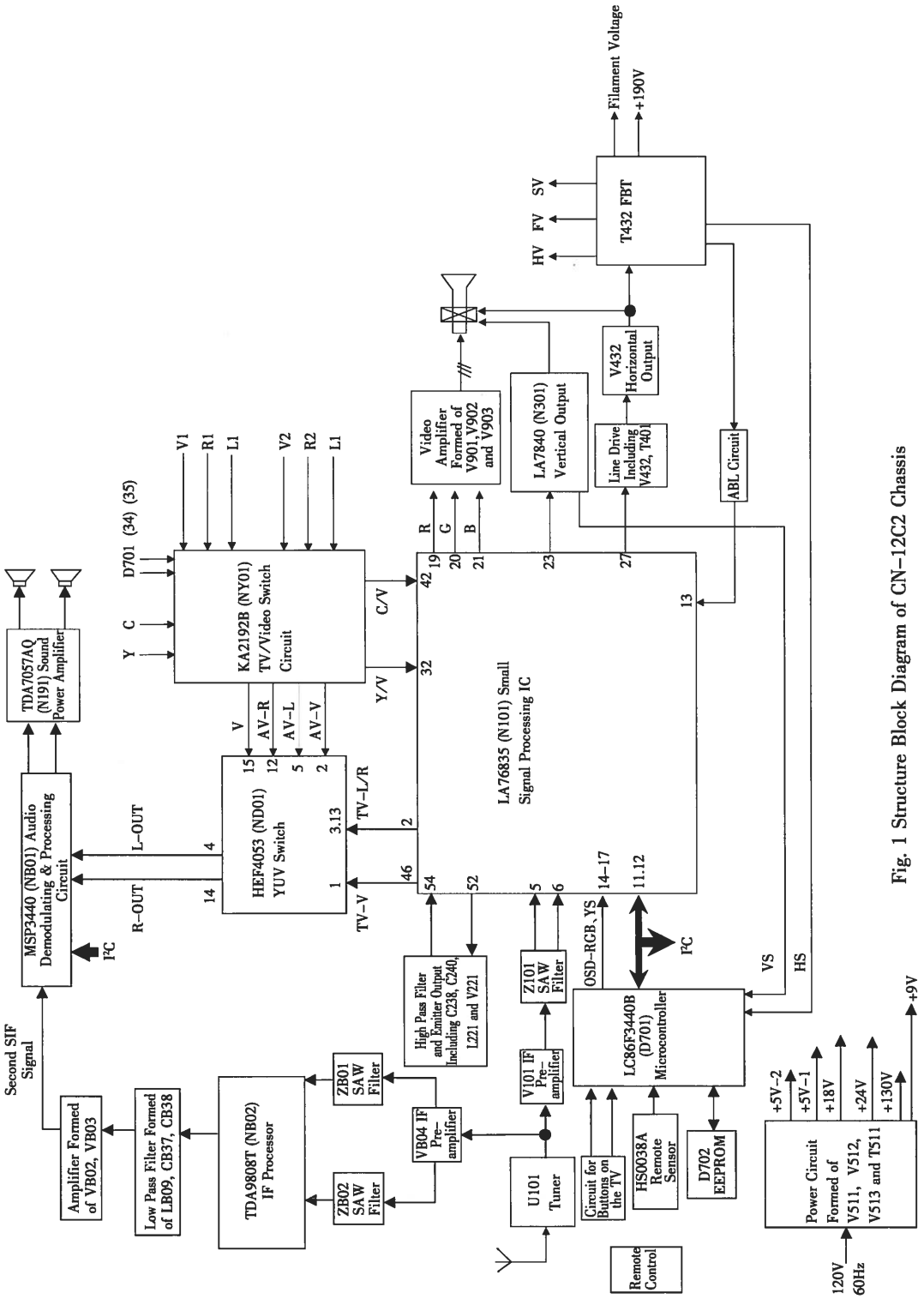
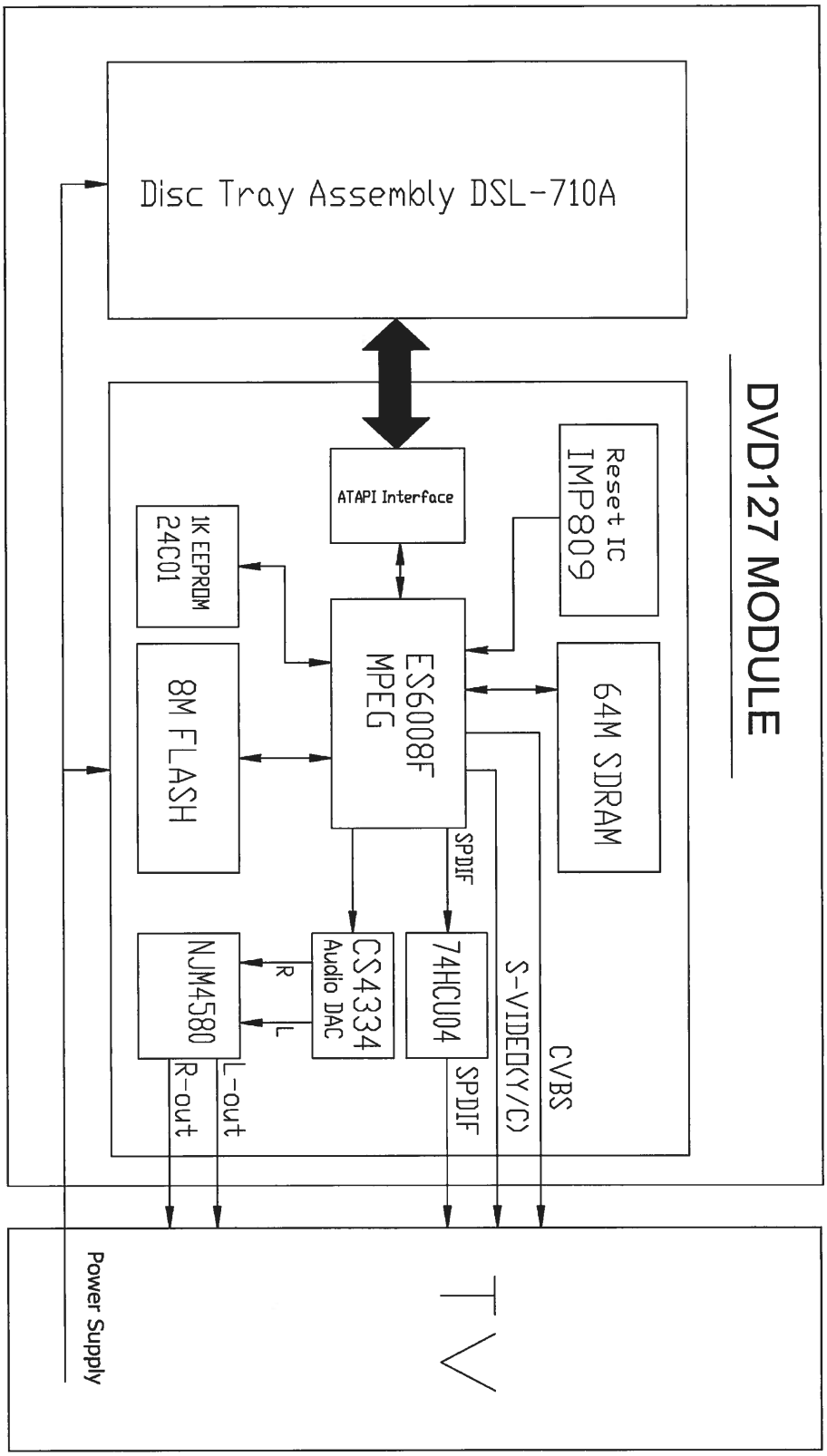
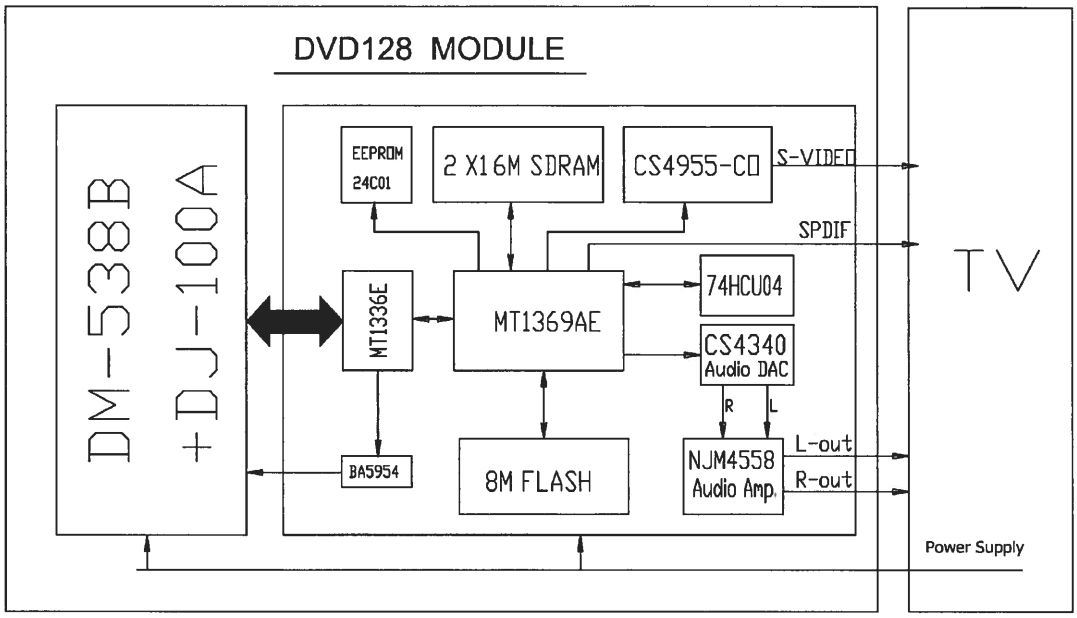


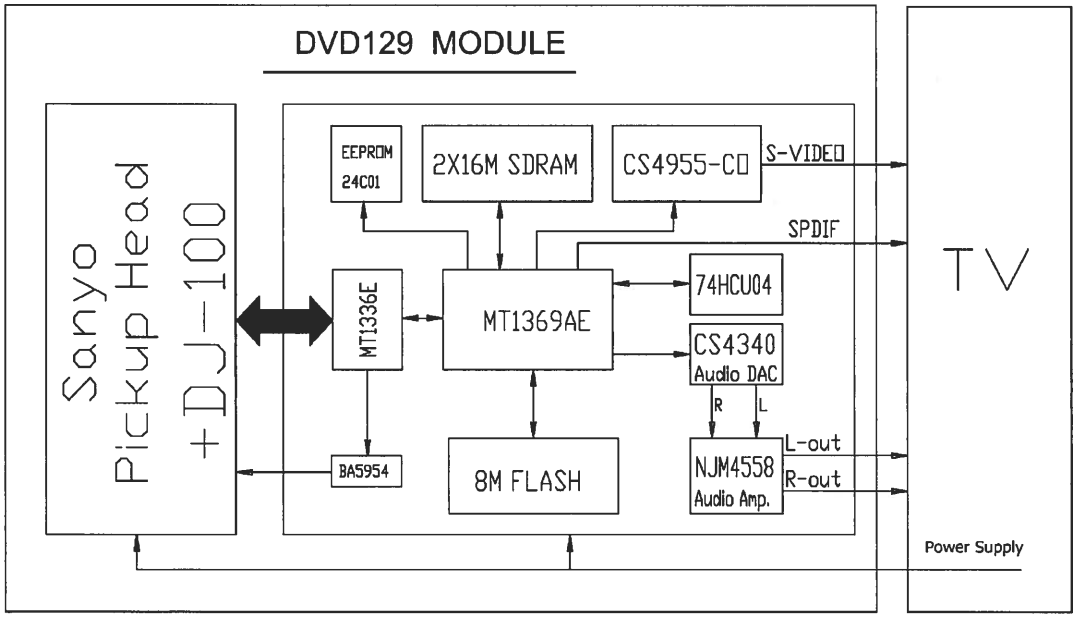
Fig. 1 Structure Block Diagram of CN-12C2 Chassis

STRUCTURE BLOCK DIAGRAM (FOR DVD127)



STRUCTURE BLOCK DIAGRAM (FOR DVD128/DVD129)





CHASSIS FUNCTION DESCRIPTION

1. General Description

GT2015DV TV/DVD combo has combined function of TV signal reception and DVD discs playback, of which TV unit uses CN-12C2 chassis and DVD unit uses one of DVD127/DVD128/DVD129 modules.

CN-12C2 chassis applies a single chip IC LA76835 of Japan-based Sanyo for small signal processing, featuring multi system reception. The applied I2C bus control technology can automatically adjust and control the TV for much convenience of operation and servicing. Refer to Fig. about the chassis' structure block diagram.

Compatible with DVD, CD, VCD, SVCD, MP3, and KODAR Picture CD, DVD127/DVD128/DVD129, high-quality modules with various functions, feature multi angle, multilingual and multi captions. With Dolby dual channel amplifying and DTS coaxial cable, the DVD audio system offers astonishingly high-quality audio output.

DVD127 contains a disc tray DSL-710A (including decoding/servo IC MT1388, memory, RF amplifier MT1366, motor drive M6302, disc motor and laser pickup head) and MPEG decoding board ES6008. With a TV encoder built-in, the decoding board uses a single chip DVD processor ES6008 for system control and driving directly TV. Refer to Fig. about DVD127's structure block diagram.

DVD128 consists of a disc tray (including DJ-100A assembly and small CDM DM-538B) and analog signal processor/servo control/MPEG decoding board MT1369AE+MT1336E. The servo control/MPEG decoding board MT1369AE, developed by MEDIATEK, is designed for use in signal control, decoding, data processing, etc., featuring servo control, AV decoding, Analog front end , DPU (DATA PATH UNIT), main axis control, CSS/CPPM module, system analysis program, video output unit, audio terminals and system control. MT1336E, also developed by MEDIATEK, is a high-performance CMOS analog signal processor with servo amplifying and DPD tracking error signal for use in CD-ROM drive and DVD-RAM. For DVD-RAM, MT1336E also uses DPP for developing tracking signal and DAD for processing focus signal. Meanwhile, the IC, programmable, is equipped with a separate DVD-ROM, CD-ROM two-way automatic laser power control circuit and reference voltage generator. Except for the same analog signal processor/servo control/MPEG decoding board as DVD128, DVD129 uses the disc tray DJ-100 including a small CDM DV33FS. Refer to Fig. about DVD128/129's structure block diagram.

2 Key ICS and Assembles

2.1 The CN-12C2 chassis mainly uses the following ICs and assemblies.

Table Key ICs and Assemblies

Serial No.	Position	Type	Function Description
1	D701	LC863440B-5014/CH04T1224	Microcontroller
2	D702	ST24C08	EEPROM
3	N101	LA76835	Small signal processor
4	NY01	KA2192B	TV/Video switch circuit
5	N301	LA7840	Vertical output circuit
6	N191	TDA7057AQ	Sound power amplifier
7	N503	LM7805	Tri-pin regulator
8	NB01	MSP3440	Audio demodulating and NICAM decoding circuit
9	NB02	TDA9808T	IF signal processor
10	NK01	HEF4053	Electronic switch circuit
11	U101	TDQ-3B6M	Tuner

2.2 The DVD127 mainly uses the following ICs and assemblies.

Serial No.	Position	Type	Function Description
		Decoding board assembly	Drawing No. JUV6.672.218
		MPEG board	
1	D1	ES6008F	MPEG decoder/ DVD servo processor
2	D2	8M FLASH	Flash memory
3	D3	64M SDRAM	Dynamic memory
4	D5	CS4334	Audio D/A controller
5	D6	24C01	1K EEPOM
6	N1	74HCU04	Enhancement drive
7	N2	NJM 4580	Sound amplifier
8	N3	IMP809MEUR-T	Reset
9	N4	78L05	Tri-pin regulator
		Servo board	
		DSL-710A	Disc tray assembly

2.3 The DVD128/DVD129 mainly use the following ICs and assemblies.

Serial No.	Position	Type	Function Description
		Decoding board assembly	
		MPEG board	Drawing No. JUV2.033.056MX (for DVD128 only)
			Drawing No. JUV2.033.061MX (for DVD129 only)
1	U1	MT1336E	RF amplifier
2	U2	BA5954F M	Focus /tracking coil and feed motor drive
3	U3	MT1369AE	MPEG decoder
4	U5	74HCU04	Enhancement drive
5	U7	8M FLASH	Flash memory
6	U9	NJM4558M	Sound amplifier
7	U10	24C01	1K EEPOM
8	U13	CS4334	Audio D/A controller
9	U14	CS4955-CQ	Video encoder
10	U17	16M SDRAM	Dynamic EEPROM
		DJ-100A	Disc tray assembly (for DVD128 only)
		DJ-100	Disc tray assembly (for DVD129 only)
		DM-538B	Small DVD CDM (for DVD128 only)
		DV33FS	Small DVD CDM (for DVD129 only)

SERVICE DATA

1. TECHNICAL DATA OF KEY ICS (FOR TV UNIT)

1.1 Microcontroller LC863440B-5014/CH04T1224

1. Overview

The LC86F3440B are 8-bit single chip microcontrollers with the following on-chip functional blocks:

-CPU:Operable at a minimum bus cycle time of 0.424μs

-On-chip ROM capacity

Program ROM:32K/28K/24K/20K/16K bytes

CGROM:16K bytes

-On-chip ROM capacity: 512 bytes

-OSD RAM: 352×9 bits

-Closed-Caption TV controller and the on-screen display controller

-Closed-Caption data slicer

-Four channels×6-bit AD Converter

-Three channels×7-bit PWM

-16-bit timer/counter, 14-bit base timer

-IIC-bus compliant serial interface circuit (Multi-master type)

-ROM correction function

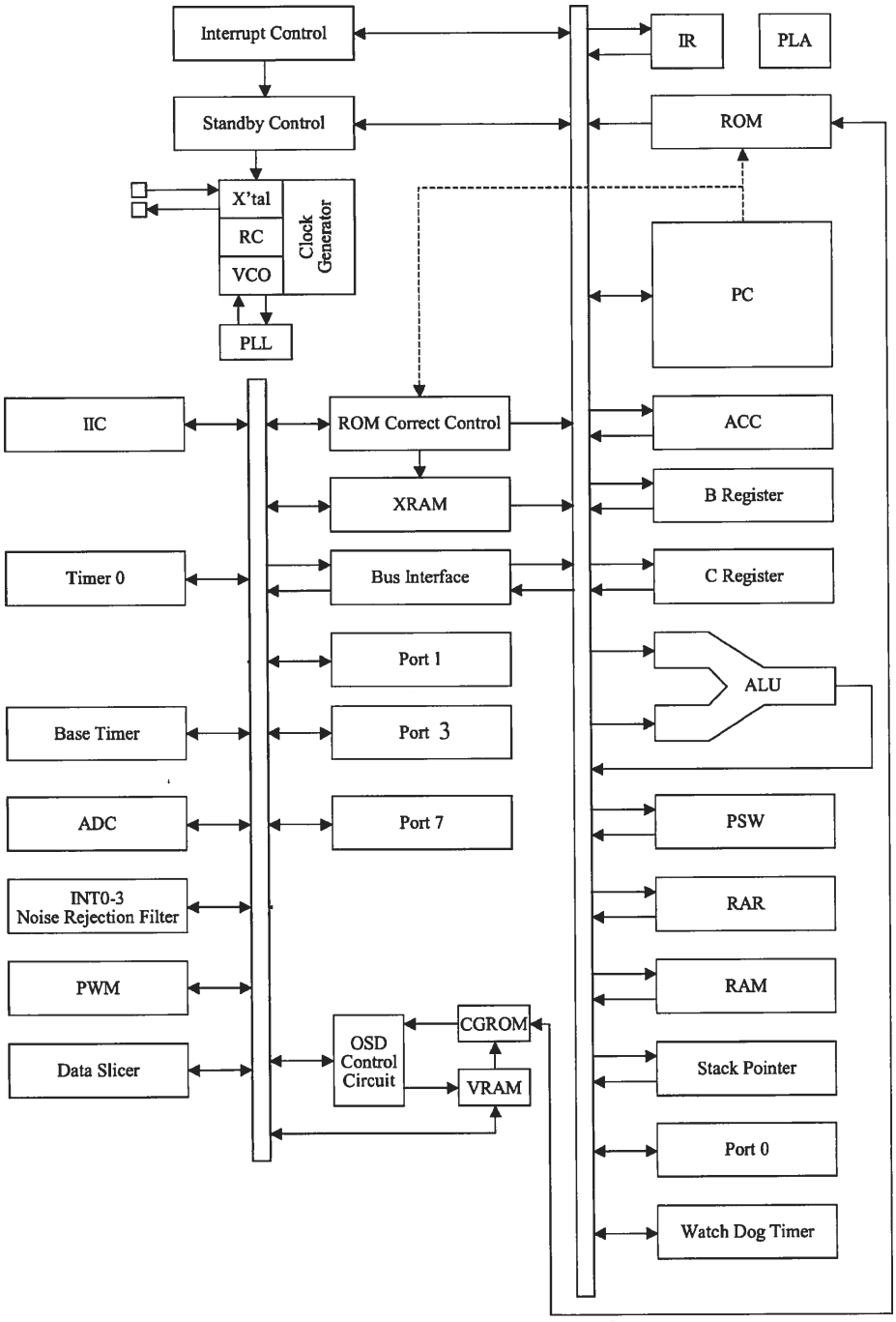
-11-source 8-vectored interrupt system

-Integrated system clock generator and display clock generator

Only one X′ tal oscillator (32.768kHz) for PLL reference is used for both generators

TV control and the Closed Caption function

All of the above functions are fabricated on a single chip.


Interrupt Control
Standby Control
X'tal
RC
VCO
Clock Generator
PLL
IIC
Timer 0
Base Timer
ADC
INT0-3
Noise Rejection Filter
PWM
Data Slicer
ROM Correct Control
XRAM
Bus Interface
Port 1
Port 3
Port 7
OSD
Control
Circuit
CGROM
VRAM
IR
PLA
ROM
PC
ACC
B Register
C Register
ALU
PSW
RAR
RAM
Stack Pointer
Port 0
Watch Dog Timer

1.2 EEPROM ST24C08

- 1 MILLION ERASE/WRITE CYCLES with 40 YEARS DATA RETENTION
- SINGLE SUPPLY VOLTAGE:
  - 3V to 5.5V for ST24x08 versions
  - 2.5V to 5.5V for ST25x08 versions
- HARDWARE WRITE CONTROL VERSIONS: ST24W08 and ST25W08
- PROGRAMMABLE WRITE PROTECTION
- TWO WIRE SERIAL INTERFACE, FULLY I^2C BUS COMPATIBLE
- BYTE and MULTIBYTE WRITE (up to 8 BYTES)
- PAGE WRITE (up to 16 BYTES)
- BYTE, RANDOM and SEQUENTIAL READ MODES
- SELF TIMED PROGRAMMING CYCLE
- AUTOMATIC ADDRESS INCREMENTING
- ENHANCED ESD/LATCH UP PERFORMANCES

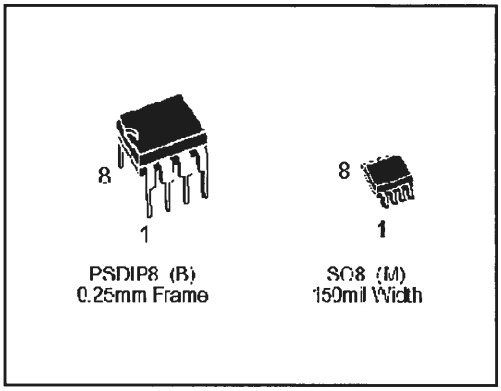
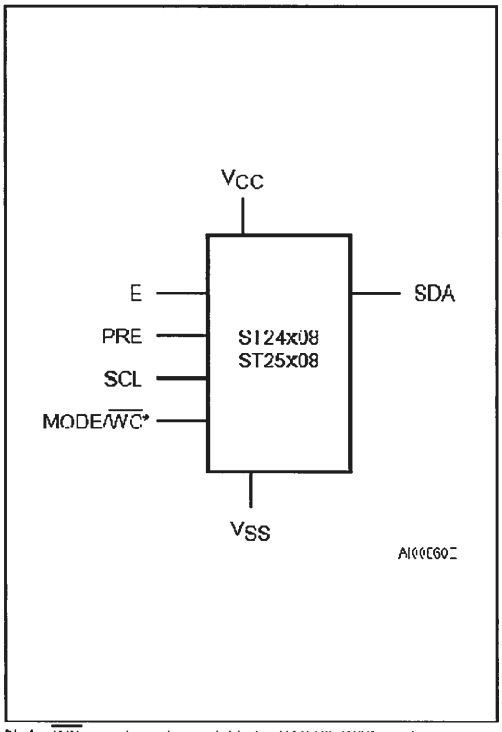


Figure 1. Logic Diagram



Note: WC signal is only available for ST24/25W08 products.

DESCRIPTION

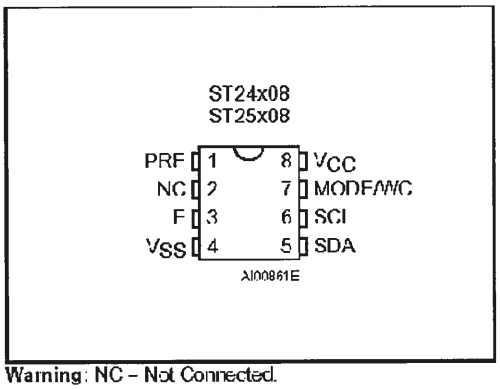
This specification covers a range of 8 Kbits I^2C bus EEPROM products, the ST24/25C08 and the ST24/25W08. In the text, products are referred to as ST24/25x08, where "x" is. "C" for Standard version and "W" for Hardware Write Control version.

Table 1. Signal Names

PRE	Write Protect Enable
E	Chip Enable Input
SDA	Serial Data Address Input/Output
SCL	Serial Clock
MODE	Multibyte/Page Write Mode (C version)
$\overline{WC}$	Write Control (W version)
V_{CC}	Supply Voltage
V_{SS}	Ground

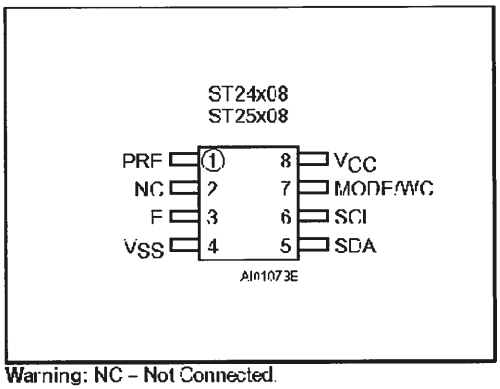
ST24/25C08, ST24/25W08

Figure 2A. DIP Pin Connections



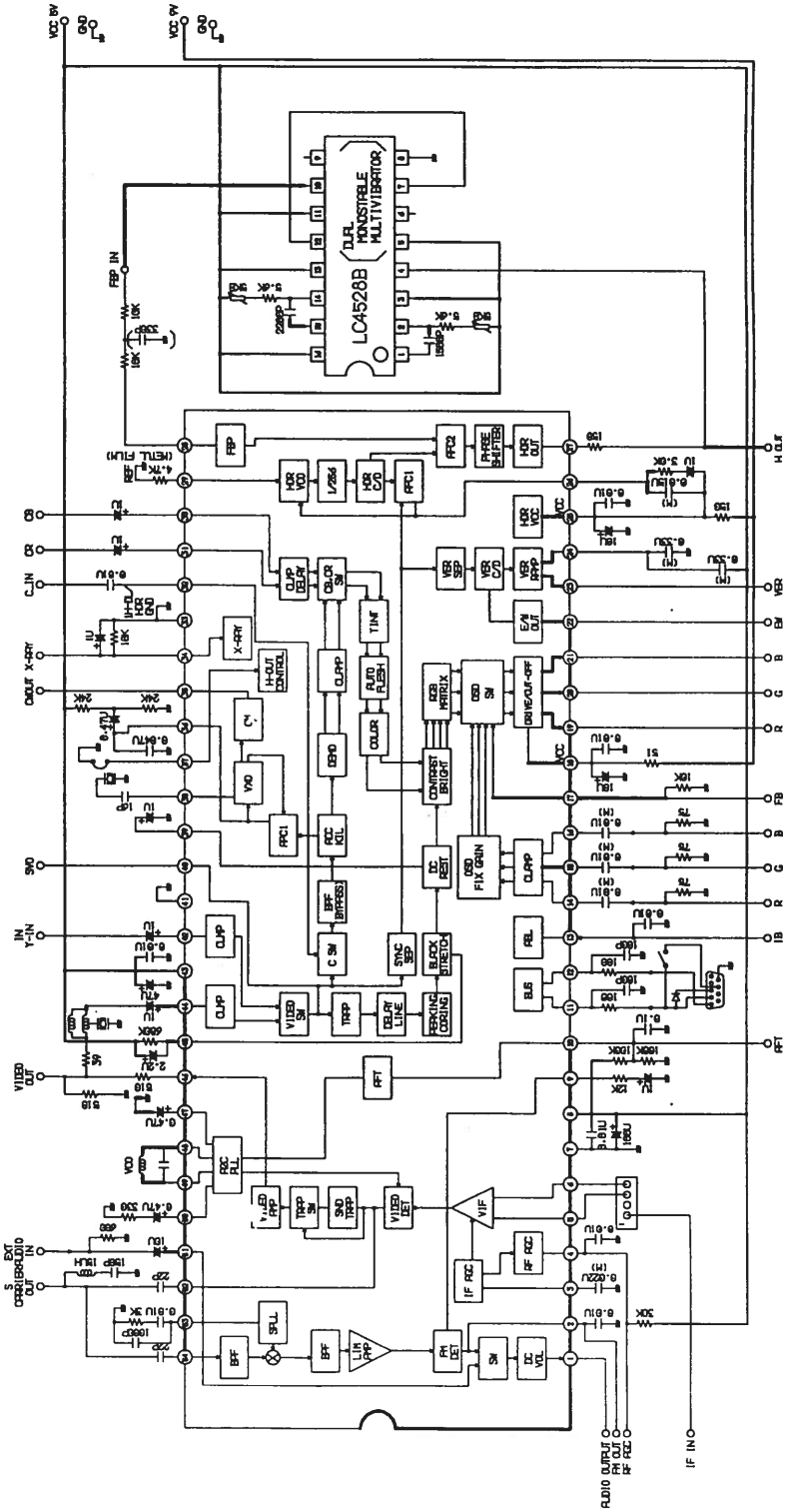
Warning: NC – Not Connected.

Figure 2B. SO Pin Connections



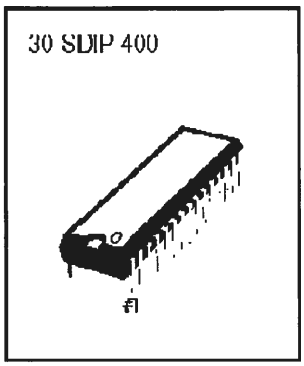
Warning: NC – Not Connected.

1.3 Small signal processor LA76835



1.4 TV/Video switch circuit KA2192B

4 IN PUT A/V SWITCH



The KA2192 is audio/video 4 input switching IC in the video system for S VHS(Super Video Home System).
This device can select audio/video signal of each different 4 kinds input.
This device separates Y(luminance) and C(chroma) for S-VHS.

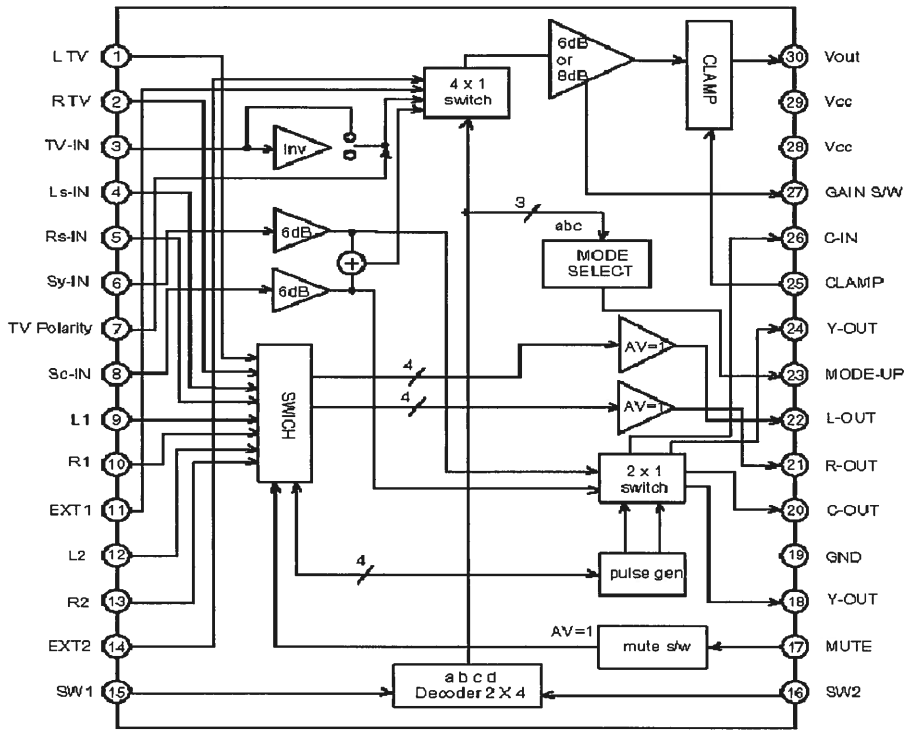
FUNCTION

- Two input decoder
- Mode selector
- 4 * 1 switch
- Mute switch
- Bias stage
- Gain switch (6dB or 8dB)
- Clamp circuit
- TV polarity switch
- 2 * 1 switch
- Pulse generator
- Switching part for selecting channel

FEATURE

- Indepandent and stable bias block to prohibit cross talk of and source.
- Available the mode output.
- TV polarity switch can select negative and positive video signal to switch conditions.
- Clamp block for stabile video signal.
- Switch for to control signal gain (6dB or 8dB).
- Separation and Processing of Y(luminance) and C(chroma) for S-VHS video.

3. BLOCK DIAGRAM



1.5 Verical output circuit LA7840

LA7840 (N301)

Vertical Deflection Output Circuit

1. Features

- Low power dissipation due to built–in pump–up circuit
- Vertical output circuit
- Thermal protection circuit built in
- Excellent crossover characteristics
- DC coupling possible

2. Block Diagram

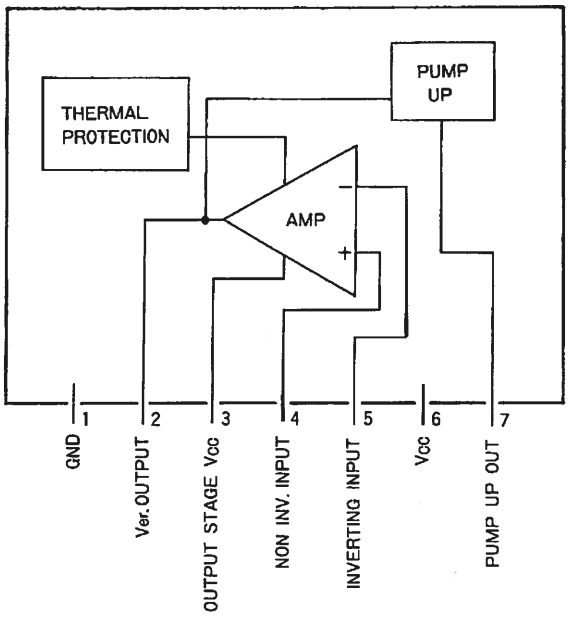


Fig. 8

1.6 Sound power amplifier TDA7057AQ

TDA7057AQ

2×8W Stereo BTL Audio Output Amplifier with DC Volume Control

1. Features

- DC volume control
- Few external components
- Mute mode
- Thermal protection
- Short–circuit proof
- No switch –on and switch –off clicks
- Good overall stability
- Low power consumption
- Low HF radiation
- ESD protected on all pins.

2. General Description

The TDA7057AQ is a stereo BTL output amplifier with DC volume control. The device is designed for use in TVs and monitiors, but is also suitable for battery–fed portable recorders and radios.

Missing Current Limiter (MCL)

A MCL protection circuit is built–in. The MCL circuit is activated when the difference in current between the output terminal of each amplifier exceeds 100 mA (typical 300 mA). This level of 100 mA allows for single–ended headphone applications.

3. Block Diagram

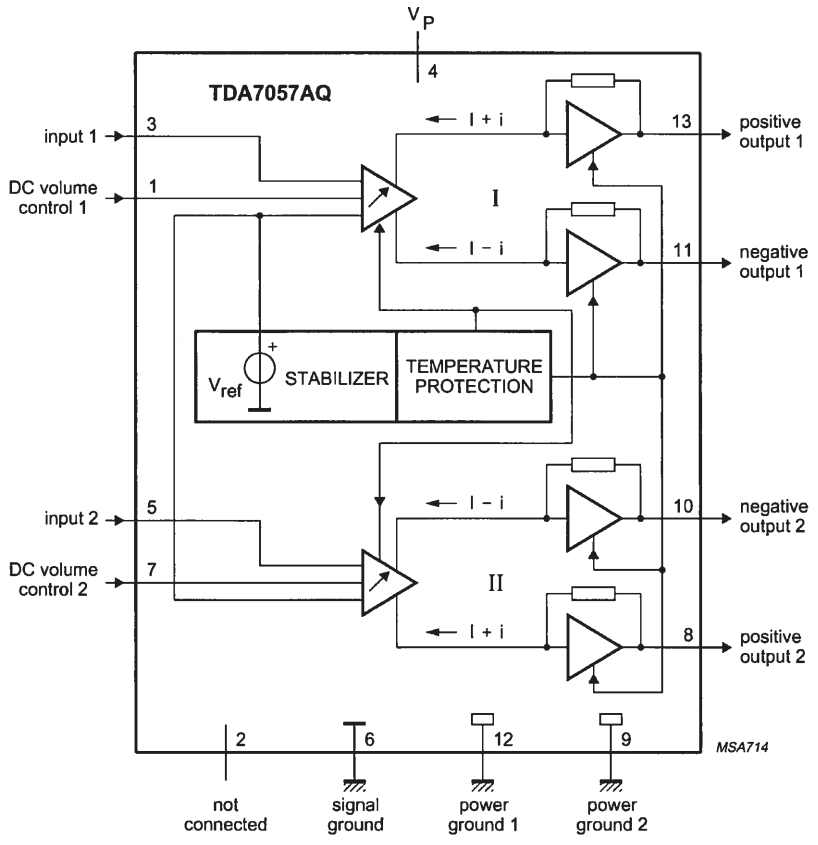


Fig. 9 Block Diagram

1.7 Audio demodulating and NICAM decoding circuit MSP3440

MSP3440

Multistandard Sound Processor Family

Release Note: Revision bars indicate significant changes to the previous edition. The hardware and software description in this document is valid for the MSP3440 version B5 and following versions.

1. Introduction

The MSP3440 family of single-chip Multistandard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip. Figure 10 shows a simplified functional block diagram of the MSP3440.

This new generation of TV sound processing ICs now includes versions for processing the multichannel television sound (MTS) signal conforming to the standard recommended by the Broadcast Television Systems Committee (BTSC). The DBX noise reduction, or alternatively MICRONAS Noise Reduction (MNR) is performed alignment free.

Other processed standards are the Japanese FM-FM multiplex standard (EIA-J) and the FM Stereo Radio standard.

Current ICs have to perform adjustment procedures in order to achieve good stereo separation for BTSC and EIA-J.
The MSP3440 has optimum stereo performance without any adjustments.

All MSP3440 versions are pin and software downward-compatible to the MSP3440. The MSP3440 further simplifies controlling software. Standard selection requires a single I^2C transmission only.

The MSP3440 has built-in automatic functions: The IC is able to detect the actual sound standard automatically (Automatic Standard Detection). Furthermore, pilot levels and identification signals can be evaluated internally with subsequent switching between mono/stereo/bilingual; no I^2C interaction is necessary (Automatic Sound Selection).

The ICs are produced in submicron CMOS technology.
The MSP3440 is available in the following packages: PLCC68, PSDIP64, PSDIP52, PQFP80 and PLQFP64.

2. Block Diagram

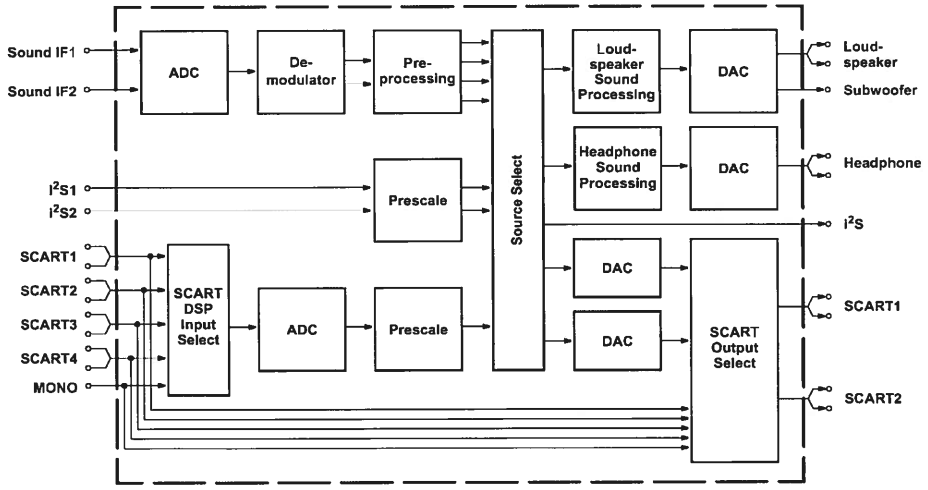


Fig. 10 Simplified Functional Block Diagram of the MSP3440

1.8 IF signal processor TDA9808T

TDA9808T

Single Standard VIF–PLL with QSS–IF and FM–PLL Demodulator

1. Features

- 5V supply voltage (9V supply voltage for TDA9808T (DIP20) only)
- Applicable for IFs (Intermediate Frequencies) of 38.9MHz, 45.75MHz and 58.75 MHz
- Gain controlled wide band Video IF (VIF)–amplifier (AC–coupled)
- True synchronous demodulation with active carrier regeneration (very linear demodulation, good intermodulation figures, reduced harmonics, excellent pulse response)
- Robustness for over–modulation better than 105% due to Phase Locked Loop (PLL)–bandwidth control at negative modulated standards
- VIF Automatic Gain Comtrol (AGC) detector for gain control, operating as peak sync detector
- Tuner AGC with adjustable TakeOver Point (TOP)
- Automatic Frequency Control (AFC) detector without extra reference circuit
- AC–coupled limiter amplifier for sound intercarrier signal
- Alignment–free FM–PLL demodulator with high linearity
- Sound IF (SIF) input for single reference Quasi Split Sound (QSS) mode (PLL controlled); SIF AGC detector for gain controlled SIF amplifier; single reference QSS mixer for high performance
- Electrostatic Discharge (ESD) protection for all pins.

2. General Description

The TDA9808T is an integrated circuit for single standard (negative modulated) vision IF signal processing and FM demodulation, with single reference QSS–IF in TV and VTR sets.

TDA9808T (continued)

3. Block Diagram

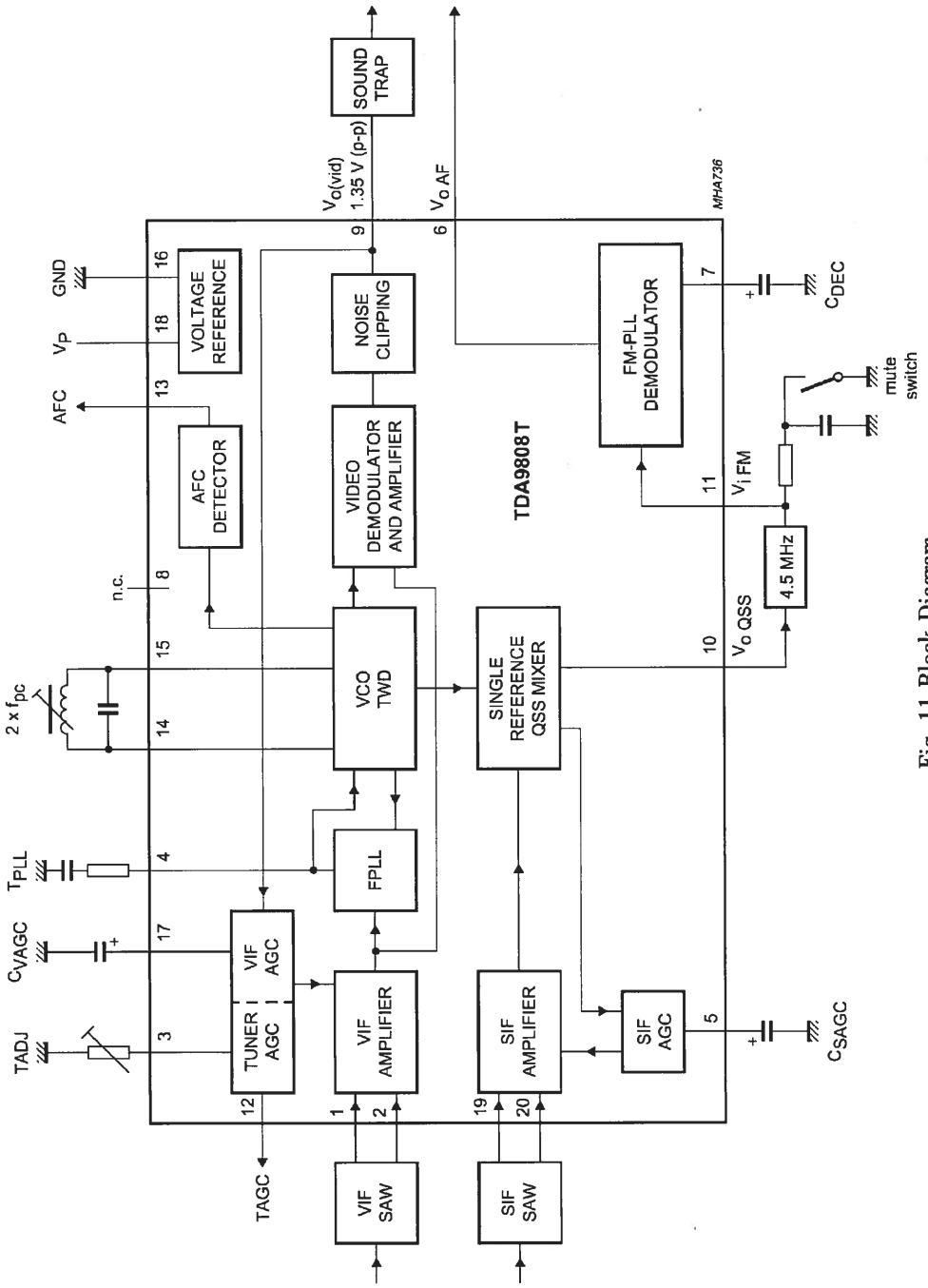


Fig. 11 Block Diagram

1.9 Electronic switch circuit HEF4053

HEF4053

Triple 2-channel Analog Multiplexer/Demultiplexer

1. Description

The HEF4053 is a triple 2-channel analog multiplexer/demultiplexer with a common enable input ($\overline{E}$). Each multiplexer/demultiplexer has two independent inputs/outputs (Y_0 and Y_1), a common input/output (Z), and select inputs (Sn). Each also contains two-bidirectional analog switches, each with one side connected to an independent input/output (Y_0 and Y_1) and the other side connected to a common input/output(Z).

With ($\overline{E}$) LOW, one of the two switches is selected (low impedance ON-state) by Sn. With $\overline{E}$ HIGH, all switches are in the high impedance OFF-state, independent of S_A to S_C.

V_{DD} and V_{SS} are the supply voltage connections for the digital control inputs (S_A to S_C and $\overline{E}$).

The V_{DD} to V_{SS} range is 3 to 15V.The analog inputs/outputs (Y_0,Y_1 and Z) can swing between V_{DD} as a positive limit and V_{EE} as a negative limit. V_{DD}-V_{EE} may not exceed 15 V.

For operation as a digital multiplexer/demultiplexer,V_{EE} is connected to V_{SS} (typically ground).

2. Block Diagrams

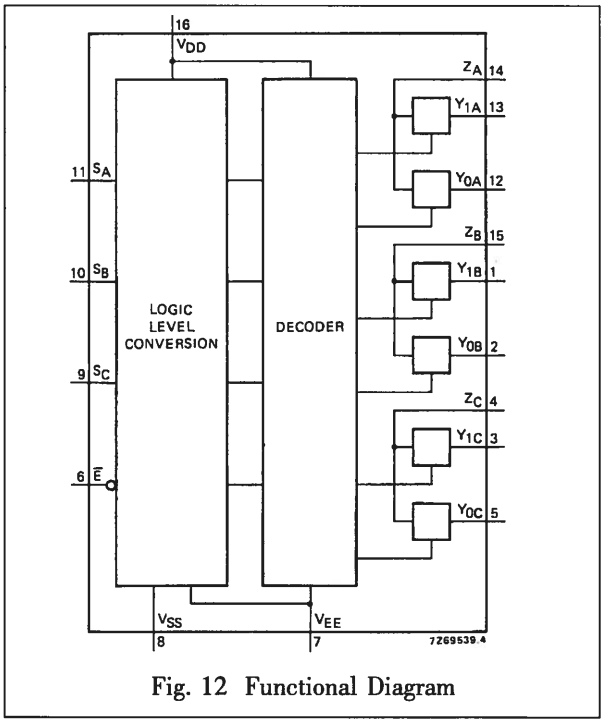


Fig. 12 Functional Diagram

3. Function Table

Inputs		Channel
$\overline{E}$	Sn	On
L	L	Y_{0n}-Zn
L	H	Y_{1n}-Zn
H	X	none

Notes

H=HIGH state (the more positive voltage)

L=LOW state (the less positive voltage)

X=STATE is immaterial

2 Service Data of Key ICs (for TV Unit)

Table 2 Functions and Service Data of LA76835 (N001)'s Pins

Pin No.	Function Description	GDM8145 Multimeter		
		Voltage of Pin (V)	Ground Resistance (Ω)	
			Measure with red probe while grounding black probe.	Measure with black probe while grounding red probe.
1	Audio signal output (NC)	2.33	810	712
2	Audio demodulation output	2.36	975	675
3	IF AGC filter	2.6	860	718
4	RFAGC voltage output	1.95	∞	680
5	IF signal input	2.89	780	693
6	IF signal input	2.89	778	712
7	IF circuit ground	0	0	0
8	Supply voltage for IF circuit	5.04	500	280
9	Filter for discriminator	1.98	910	713
10	AFT voltage output	3.65	910	617
11	I²C bus data line	4.71	1560	640
12	I²C bus clock line	4.41	1542	667
13	Auto brightness control input	3.68	945	577
14	R character signal input	1.43/0	920	700
15	G character signal input	1.46/0	913	701
16	B character signal input	1.44/0	906	700
17	Character blanking signal input	0.02/0	780	683
18	Supply voltage for decoder	8.28	525	500
19	Red (R) signal output	2.81	780	671
20	Green (G) signal output	2.79	780	670
21	Blue (B) signal output	2.7	780	670
22	White balance adjusting signal input (NC)	1.85	830	696
23	Vertical sawtooth output	2.45	710	672
24	Vertical sawtooth generation	2.64	782	702
25	Horizontal start supply voltage	5.27	350	350
26	Low pass filter for horizontal AFC	2.72	815	708
27	Line drive pulse output	0.72	700	653
28	Line flyback pulse input	0.91	785	707
29	Reference voltage generation terminal	1.74	746	700
30	B-Y color difference signal input (SECOM)	0.93	825	608
31	C-Y color difference signal input (SECOM)	0.94	330	330
32	External video/chroma signals inputs	4.17	∞	567
33	1H baseband delay circuit ground	0	0	0

(Continued)

34	X-RAY detection input	0	775	712
35	4.43MHz CW signal output or SECAM killer signal input	2.05	776	712
36	AFC filter for color sub-carrier	3.41	810	724
37	Clamp filter	0	800	706
38	4.43 MHz crystal oscillator connection	2.83	790	716
39	APC filter	1.89	760	697
40	Video signal output (NC)	2.76	730	662
41	Video/chroma/scan part ground	0	0	0
42	Video signals input from AV terminals or Y signal input from S-VIDEO terminal	2.93	800	711
43	Supply voltage for video/chroma/scan part	4.99	285	280
44	C signal input from AV terminals or S-VIDEO terminal (NC)	2.76	805	707
45	Filter for black level stretch	3.16	762	700
46	Video detection output	2.9	397	397
47	IF lock detection filter	3.58	840	712
48	External VCO harmonic oscillating coil	4.29	526	526
49	External VCO harmonic oscillating coil	4.29	530	530
50	IF PLL APC filter	2.47	820	698
51	Audio signal input (NC)	2.23	800	701
52	Sound IF output	1.94	809	697
53	APC filter for audio discrimination	2.41	808	691
54	Sound IF input	3.17	824	712

Table 3 Functions and Service Data of LC86F3440B (D701)'s Pins

Pin No.	Function Description	GDM8145 Multimeter		
		Voltage of Pin (V)	Ground Resistance (KΩ)	
			Measure with red probe while grounding black probe.	Measure with black probe while grounding red probe.
1	Not connected	1.50	11.8	4.40
2	Not connected	1.43	12.1	5.20
3	Bus data line	4.70	11.6	6.20
4	Bus clock line	4.47	12.1	6.00
5	Ground	0.00	0.00	0.00
6	Input terminal for clock oscillating signal	1.78	12.6	5.1
7	Output terminal for clock oscillating signal	2.88	12.0	4.91
8	Supply voltage	5.31	7.90	3.72
9	Button-control voltage input terminal 1	0.02	9.70	5.34
10	AFT voltage input terminal	2.47	4.90	5.08
11	X-RAY detection input	2.25	6.70	4.59
12	Button-control voltage input terminal 2	0.015	8.86	3.81

(Continued)

13	Reset	5.27	4.67	1.88
14	Character oscillating filter	3.87	1.11	4.98
15	Video signal input terminal	3.53	12.3	4.50
16	Three bits input/output terminals	0.01	9.76	15.0
17	Input terminal for vertical flyback pulse	5.07	15.4	18.1
18	Input terminal for horizontal flyback pulse	4.62	17.4	18.4
19	R character output terminal	0.015	3.92	3.29
20	G character output terminal	0.014	3.95	3.71
21	B character output terminal	0.015	3.19	3.66
22	Output terminal for fast blanking signal	0.015	6.50	3.67
23	Mute	0.015	18.7	17.62
24	Standby control	0.015	1.43	7.30
25	Not connected	1.23	9.50	6.65
26	Control terminal for production modes	4.61	13.0	6.95
27	Degaussing circuit control	0.014	3.713	3.42
28	Remote control signal input	5.19	12.2	5.32
29	Not connected	5.30	12.4	5.49
30	Not connected	5.30	12.6	5.42
31	Not connected	0.01	12.7	5.35
32	Not connected	0.01	12.7	5.30
33	Output terminal for on/off control signals	5.30	12.7	6.59
34	Output terminal for AV2 on/off control	5.30	11.8	6.36
35	Output terminal for AV1 on/off control	5.30	11.4	6.33
36	Output terminal for AV0 on/off control	5.29	11.2	6.33

Table 4 Functions and Service Data of ST24C08 (D702)'s Pins

Pin No.	Function Description	DT890D Digital Multimeter		
		Voltage of Pin (V)	Ground Resistance (Ω)	Negative Resistance (KΩ)
			Measure with red probe while grounding black probe.	Measure with black probe while grounding red probe.
1	Address input terminal	0.00	0.00	0.00
2	Address input terminal	0.00	0.00	0.00
3	Address input terminal	0.00	0.00	0.00
4	Common ground	0.00	0.00	0.00
5	Clock line	4.94	6.85	4.83
6	Data line	4.94	6.89	5.15
7	PW write protection terminal	0.00	9.58	5.31
8	Supply voltage	5.32	3.5	3.25

Table 5 Functions and Service Data of KA2192B (NY01)'s Pins

Pin No.	Function Description	DT890D Digital Multimeter		
		Voltage of Pin (V)	Ground Resistance (Ω)	
			Measure with red probe while grounding black probe.	Measure with black probe while grounding red probe.
1	L TV IN	5.67	6.45	3.53
2	R TV IN	5.67	6.45	3.74
3	TV IN	5.67	6.57	4.02
4	LS IN	5.69	6.45	3.66
5	RS IN	5.69	6.47	3.72
6	SY IN	5.54	6.85	3.96
7	TV SW	0.00	0.00	0.00
8	SC IN	5.54	6.75	3.85
9	L1 IN	5.69	6.43	3.36
10	R1 IN	5.70	6.37	3.72
11	E1 IN	5.56	6.85	3.96
12	L2 IN	5.70	6.43	3.87
13	R2 IN	5.70	6.33	3.67
14	E2 IN	5.56	6.83	4.01
15	SW1	5.25	6.84	5.59
16	SW2	5.25	6.85	5.59
17	MUTE	0.00	0.00	0.00
18	Y OUT	3.89	1.418	1.51
19	GND	0.00	0.00	0.00
20	C OUT	3.84	0.96	1.15
21	R OUT	4.37	6.63	3.35
22	L OUT	4.37	6.61	3.31
23	NC	0.06	6.71	3.97
24	Y IN	5.55	6.70	4.18
25	SYNC CLAMP	3.47	6.80	5.75
26	C IN	5.57	6.67	4.07
27	NC	0.25	6.69	4.13
28	VCC	9.38	0.34	0.33
29	VCC	9.38	0.31	0.30
30	V OUT	3.17	6.47	0.48

Table 6 Functions and Service Data of LA7840 (N301)'s Pins

Pin No.	Function Description	DT890D Digital Multimeter		
		Voltage of Pin (V)	Ground Resistance (Ω)	
			Measure with red probe while grounding black probe.	Measure with black probe while grounding red probe.
1	Ground	0	0	0
2	Vertical output terminal	14.8	365	360
3	Pump supply voltage input	24.5	∞	584
4	Reference voltage	2.24	660	600
5	Inverting input terminal	2.23	800	672
6	Supply voltage	24	770	465
7	Vertical flyback pulse output terminal	2.25	1167	638

Table 7 Functions and Service Data of TDA7057AQ (N601)'s Pins

Pin No.	Function Description	GDM8145 Multimeter		
		Voltage (V)	Positive Resistance (KΩ)	Negative Resistance (KΩ)
1	Volume control input	0.95	6.85	6.15
2	Not connected	0.00	∞	∞
3	Audio R signal input	2.38	12.59	6.51
4	Supply voltage	17.48	0.47	0.47
5	Audio L signal input	2.37	12.5	6.51
6	Ground	0.00	0.00	0.00
7	Volume control input	0.95	6.85	0.15
8	Left channel in-phase signal output	8016	6.46	5.59
9	Ground	0.00	0.00	0.00
10	Left channel inverting signal output	8.25	6.46	5.59
11	Right channel inverting signal output	8.24	6.46	5.59
12	Ground	0.00	0.00	0.00
13	Right channel in-phase signal output	8.13	6.46	5.59

Table 8 Functions and Service Data of MSP3440 (NB01)'s Pins

Pin No.	Function Description	GDM8145 Multimeter		
		Voltage (V)	Positive Resistance (KΩ)	Negative Resistance (KΩ)
1	NC	0.00	15.32	5.3
2	NC	2.57	13.41	5.51
3	NC	0.00	15.32	5.57
4	NC	0.00	15.32	5.58
5	ADR-SEL	5.03	8.62	4.54
6	STANDBYQ	5.03	8.63	4.54
7	12C-DC	3.8	6.98	4.44
8	12C-DA	3.9	6.98	4.44

(Continued)

9	NC	2.5	15.32	6.24
10	NC	2.82	15.32	6.24
11	NC	2.5	15.32	6.24
12	NC	0.27	15.32	5.29
13	NC	0.2	15.32	5.59
14	NC	0.1	15.32	5.59
15	NC	0.1	15.32	5.59
16	DVSUP	5.04	8.6	4.54
17	DVSS	0.00	0.00	0.00
18	NC	0.00	15.32	5.31
19	NC	0.00	∞	∞
20	RESETQ	5	15.04	5.24
21	NC	0.00	3.54	3.54
22	NC	0.00	3.52	3.52
23	VREF2	0.00	0.00	0.00
24	DACM-R	2.03	3.52	3.52
25	DACM-L	2.04	3.54	3.54
26	NC	1.41	3.6	3.6
27	NC	3.81	13.8	5.92
28	NC	3.79	13.8	5.91
29	GND	0.00	0.00	0.00
30	SC1-OUT-R	3.8	12.8	5.91
31	SC1-OUT-L	3.79	12.8	5.92
32	CAPL-A	7.28	∞	6.04
33	AHVSUP	8.26	∞	4.59
34	CAPL-M	6.53	∞	6.04
35	AHVSS	0.00	0.00	0.00
36	ABNDC	3.74	∞	6.02
37	NC	3.77	∞	6.1
38	NC	3.77	∞	6.1
39	NC	3.77	∞	6.1
40	NC	3.77	∞	6.1
41	SC1-IN-L	3.77	∞	6.1
42	SC1-IN-R	3.77	∞	6.1
43	VREFTOP	2.61	1.63	1.63
44	NC	3.77	19.42	6.1
45	AVSS	0	0.00	0.00
46	AVSUP	5.13	8.62	4.53
47	ANA-IN1+	1.52	15.3	5.27
48	ANA-IN1-	1.52	15.3	5.26
49	ANA-IN2+	0.00	15.3	5.27
50	TESTEN	0.00	0.00	0.00
51	XTAL-IN	2.49	14.79	5.27
52	XTAL-OUT	2.49	14.63	5.3

Table 9 Functions and Service Data of TDA9808T (NB02)'s Pins

Pin No.	Function Description	GDM8145 Multimeter		
		Voltage (V)	Positive Resistance (KΩ)	Negative Resistance (KΩ)
1	PIF signal input 1	3.2	7.46	6.03
2	PIF signal input 2	3.2	7.46	5.99
3	RFAGC start-control level adjustment	0.96	6.82	5.85
4	PLL APC filter	2.47	8.32	6.3
5	Audio AGC filter	2.77	8.08	6.17
6	Audio output (NTSC 4.5MHz)	2.36	7.46	5.86
7	Filter	1.78	8.25	6.29
8	1/2VCC comparison voltage bias	0.00	∞	∞
9	Video output	2.61	7.89	6.09
10	Second SIF signal output	2.01	8.03	6.17
11	Second SIF signal input	2.79	5.2	4.99
12	RFAGC output	0.04	∞	6.1
13	AGC signal output	3.99	8.25	6.2
14	External connection for VCO oscillating LC network	2.74	7.25	6
15	External connection for VCO oscillating LC network	2.74	7.25	6
16	Ground	0.00	0.00	0.00
17	AGC filter	2.74	8.3	6.11
18	Supply voltage input terminal	8.57	2.79	2.7
19	SIF signal input	3.17	7.2	6.27
20	SIF signal input	3.17	7.2	6.27

Table 10 Functions and Service Data of HEF4053 (NK01)'s Pins

Pin No.	Function Description	GDM8145 Multimeter		
		Voltage of Pin (V)	Ground Resistance (Ω)	
			Measure with red probe while grounding black probe.	Measure with black probe while grounding red probe.
1	Signal input terminal	3.91	6.31	0.12
2	Signal input terminal	5.01	6.31	0.11
3	Signal input terminal	0.00	0.00	3.41
4	Signal output terminal	0.02	6.07	0.05
5	Signal input terminal	0.22	6.17	3.72
6	Ground	0.00	0.00	0.00
7	Ground	0.00	0.017	0.00
8	Ground	0.00	0.017	0.00
9	Control signal input terminal	4.42	6.27	6.08
10	Control signal input terminal	4.42	6.24	6.07
11	Control signal input terminal	4.42	6.24	6.08
12	Signal input terminal	3.30	6.08	3.66
13	Signal output terminal	1.31	5.96	4.72
14	Signal input terminal	1.44	5.95	3.69
15	Signal output terminal	1.43	6.017	4.01
16	Supply voltage	5.04	0.352	0.33

Table 11 Functions and Service Data of LM7805 (N503)'s Pins

Pin No.	Function Description	DT890D Digital Multimeter		
		Voltage of Pin (V)	Ground Resistance (Ω)	
			Measure with red probe while grounding black probe.	Measure with black probe while grounding red probe.
1	Input terminal	15	865	477
2	Regulation output	5	1015	477
3	Ground	0	0	477

Table 12 Each Electrode Voltage of Key Triodes

Position No. / Pin Voltage	V121	V122	V123	V101	V711	V721	V723	V830	V831	V801
Ub(v)	4.35/5	5/4.43	5/5	1.39	4.34	0	0	0.63/0	0.72/0	18.37
Uc(v)	4.9/0	0/5	0/0	7.5	4.98	4.17	4.71	0/8.7	0.1/10	35
Ue(v)	5/5	5/5	5/5	0.64	5	0	0	0/0	0/0	19

Position No. / Pin Voltage	V906	V907	V908	V901	V902	V903	V904	V905	V431	V432	V301
Ub(v)	2.34	2.38	2.37	3.2	3.06	3.05	0	0.8	0.15	-26.45	0.62
Uc(v)	0	0	0	110.8	114.3	112.4	4.92	0	50.5	114	26.76
Ue(v)	3.12	3.06	3.05	2.66	2.60	2.60	0.29	1.53	0	-26.28	0

3. Waveforms of Key Points (for TV Unit)

4. Technical Data of Key ICs (for DVD Unit)

4.1 Technical data for MPEG decoder/DVD servo processor ES6008

1.DESCRIPTION

Built on ESS' proprietary and flexible Programmable Multimedia Processor architecture, the VibrattoTM series of DVD processors combine audio/video stream data processing, system control and housekeeping functions, video postprocessing, and display format encoding, enabling various DVD-based multimedia electronics to be built with minimal external components. The Vibratto series includes new features for DVD-Audio support, progressive scan video output, and built-in TV encoder and video DACs.

All of the Vibratto DVD processors each include two parallel processing units, a RISC processor, a vector engine, and supplemental hardware resources for implementing specialized encoding and decoding tasks in the device architectures. All of these resources are interconnected with two separate data buses, each with its own DMA unit and interface to external memory. The processing units enable simultaneous parallel execution of system commands and data processing.

Both the RISC processor and vector engine are independently programmable. Each has its own on-chip cache memory. The RISC processor and its associated hardware units perform bit stream parsing, control audio data output, transfer video and audio data to the vector engine and service system control and housekeeping functions. The vector engine and associated hardware units perform audio and video microcode processing required by A/V standards such as Dolby DigitalTM, DTSTM, MPEG and JPEG. These processing tasks include audio DSP, video motion compensation and estimation, loop filtering, discrete cosine transforms (DCT) and inverse DCT, quantization and inverse quantization.

The Vibratto DVD processors support both JPEG/MP3 audio playback and the Kodak PictureCD JPEG display format. These new features allow Picture CDs created

with images and voiceovers from digital cameras to be enjoyed in a DVD player or Home Theater System. All of the Vibratto DVD processors support both parallel and serial DVD loader interfaces for system MPEG A/V data stream input, industry standard-I2S bus for audio data input and output, direct system EPROM and SDRAM access for high-speed command fetching and audio/video data buffering and processing. The Vibratto DVD processors are available in 208-pin Plastic Quad Flat Pack (PQFP) device packages.

2.FEATURES

- Dedicated core and I/O power supplies for low-power operation; integrated 32-bit RISC processor for system host, eliminating requirements of an external host CPU
- Supports DVD-Video, DVD-Audio, VideoCD 1.1, 2.0, and 3.0, Super VideoCD (SVCD), CD-DA, MP3, and Kodak Picture-CD
- Supports parallel and serial interfaces to ATAPI, Compact Flash, DCI, IDE and UDF DVD loaders
- Direct interface of 8- or 16-bit SDRAM of up to 128-Mb capacity at a variety of speed grades
- Direct interface of up to 4 banks of 8- or 16-bit EPROM or Flash EPROM; automatic firmware updating of Flash EPROM through DVD loader

Video

- Built-in NTSC/PAL encoder includes field-adaptive deinterlacing for progressive scan video output for clearer and more stable display (ES6028 and ES6038 Only)
- Macrovision 7.1 and Macrovision AGC 1.03 compliant video outputs for 480-pixel progressive scan and for NTSC/PAL interlaced video
- Four built-in 10-bit Video DACs provide simultaneous video outputs of composite and S-video, or composite and YUV; supports selectable 8-bit CCIR 601 4:2:2 YUV outputs
- 8-bit On-Screen Display (OSD) controller with 3-bit blending provides display with 256 colors in 8 degrees of transparency
- On-chip Subpicture Unit (SPU) decoder supports karaoke lyric, subtitles, and EIA-608 compliant Line 21 Captioning

●Video error concealment, motion zoom and pan and NTSC to PAL and PAL to NTSC conversion supported

Audio

●Dolby Digital (AC-3), DVD-Audio, Pro Logic, DTS, MPEG-1 layer 2 and 3 Audio (MP3), and High-Definition Compatible Digital. (HDCD) decoding

●On-chip Dolby Digital (AC-3) and DTS 5.1 channel decoding and output (ES6018/28/38 Only)

●Dolby Digital and DTS S/PDIF digital audio output.

●Dolby Digital Class A, DTS, and HDCD certified

●Meridian Lossless Packing. (MLP) decoding and Linear PCM for DVD-Audio (ES6038 Only)

3.SYSTEM BLOCK DIAGRAM

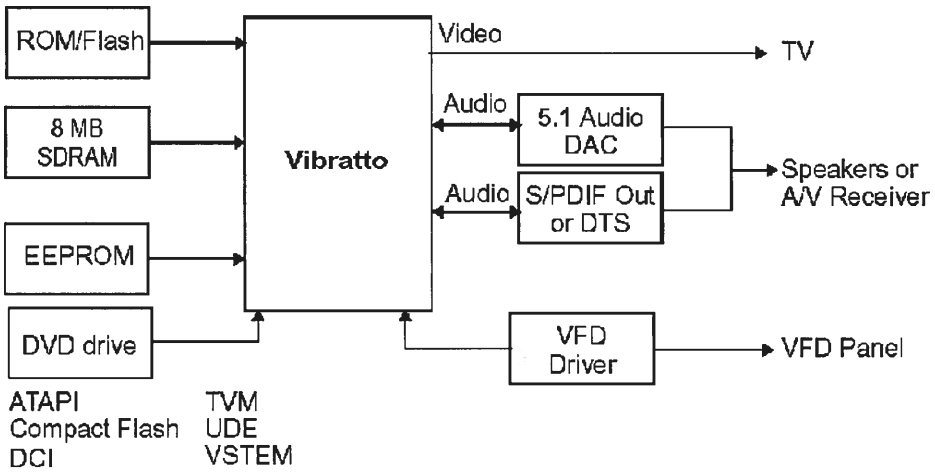


Figure 1 Vibratto System Block Diagram

ES60X8 PINOUT DIAGRAM

The identical device pinouts for the ES6008, ES6018, ES6028 and ES6038 are shown in Figure 2.

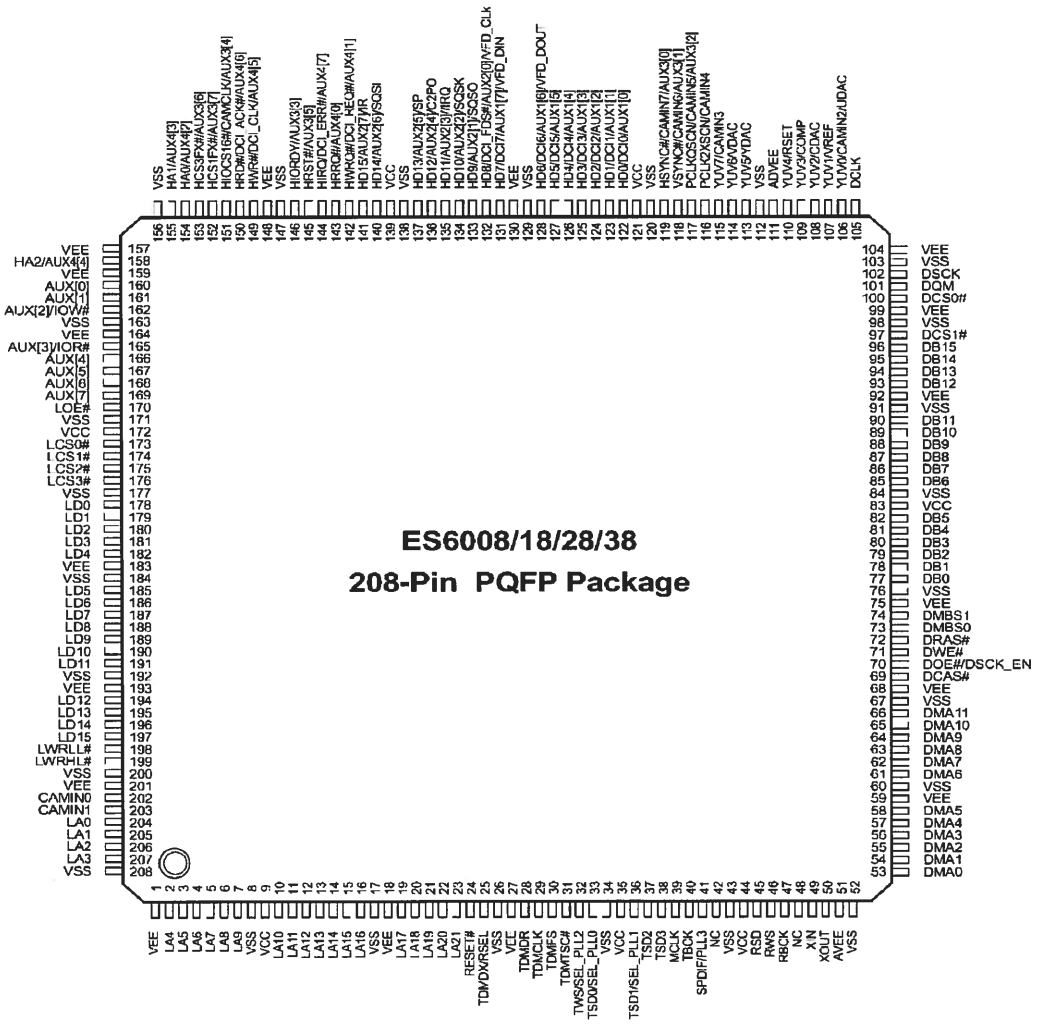


Figure 2 ES60x8 Pinout

5. ES60X8 PIN DESCRIPTION

Table 1 lists the identical pin descriptions for the ES6008, ES6018, ES6028 and ES6038.

Table 1 ES60x8 Pin Description

<table>
<tr><th>Name</th><th>Number</th><th>I/O</th><th>Definition</th></tr>
<tr><td>VEE</td><td>1,18, 27, 59, 68, 75, 92, 99, 104, 130, 148, 157, 159, 164, 183, 193, 201</td><td>I</td><td>I/O power supply.</td></tr>
<tr><td>VSS</td><td>8, 17, 26, 34, 43, 52, 60, 67, 76, 84, 91, 98, 103, 112, 120, 129, 138, 147, 156, 163, 171, 177, 184, 192, 200, 208</td><td>I</td><td>Ground.</td></tr>
<tr><td>LA[21:0]</td><td>23:19, 16:10, 7:2, 207:204</td><td>O</td><td>Device address output.</td></tr>
<tr><td>VCC</td><td>9, 35, 44, 83, 121, 139, 172</td><td>I</td><td>Core power supply.</td></tr>
<tr><td>RESET#</td><td>24</td><td>I</td><td>Reset input, active low.</td></tr>
<tr><td>TDMDX</td><td rowspan="2">25</td><td>O</td><td>TDM transmit data.</td></tr>
<tr><td>RSEL</td><td>I</td><td>ROM Select.
<table>
<tr><th>RSEL</th><th>Selection</th></tr>
<tr><td>0</td><td>16-bit ROM</td></tr>
<tr><td>1</td><td>8-bit ROM</td></tr>
</table></td></tr>
<tr><td>TDMDR</td><td>28</td><td>I</td><td>TDM receive data.</td></tr>
<tr><td>TDMCLK</td><td>29</td><td>I</td><td>TDM clock input.</td></tr>
<tr><td>TDMFS</td><td>30</td><td>I</td><td>TDM frame sync.</td></tr>
<tr><td>TDMTSC#</td><td>31</td><td>O</td><td>TDM output enable.</td></tr>
<tr><td>TWS</td><td rowspan="2">32</td><td>O</td><td>Audio transmit frame sync.</td></tr>
<tr><td>SEL_PLL2</td><td>I</td><td>System and DSCK output clock frequency selection is made at the rising edge of RESET#. The matrix below lists the available clock frequencies and their respective PLL bit settings.
<table>
<tr><th>SEL_PLL2</th><th>SEL_PLL1</th><th>SEL_PLL0</th><th>Clock Type</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>VCO off</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>DCLK</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>Bypass mode</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>DCLK x 2</td></tr>
<tr><td>1</td><td>0</td><td>0</td><td>DCLK x 4.5</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>DCLK x 3</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>DCLK x 3.5z</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>DCLK x 4</td></tr>
</table></td></tr>
<tr><td>TSD0</td><td rowspan="2">33</td><td>O</td><td>Audio transmit serial data port 0.</td></tr>
<tr><td>SEL_PLL0</td><td>I</td><td>Refer to the description and matrix for SEL_PLL2 pin 32.</td></tr>
<tr><td>TSD1</td><td rowspan="2">36</td><td>O</td><td>Audio transmit serial data port 1.</td></tr>
<tr><td>SEL_PLL1</td><td>I</td><td>Refer to the description and matrix for SEL_PLL2 pin 32.</td></tr>
<tr><td>TSD[2]</td><td>37</td><td>O</td><td>Audio transmit serial data output 2.</td></tr>
<tr><td>TSD[3]</td><td>38</td><td>O</td><td>Audio transmit serial data output 3.</td></tr>
</table>

Table 1 ES60x8 Pin Description (Continued)

<table>
<tr><th>Name</th><th>Number</th><th>I/O</th><th>Definition</th></tr>
<tr><td>MCLK</td><td>39</td><td>I/O</td><td>Audio master clock for audio DAC.</td></tr>
<tr><td>TBCK</td><td>40</td><td>O</td><td>Audio transmit bit clock.</td></tr>
<tr><td>SPDIF</td><td rowspan="2">41</td><td>O</td><td>S/PDIF output.</td></tr>
<tr><td>SEL_PLL3</td><td>I</td><td>Clock source select.
<table><tr><th>SEL_PLL3</th><th>Clock Source</th></tr><tr><td>0</td><td>Crystal oscillator</td></tr><tr><td>1</td><td>DCLK input</td></tr></table></td></tr>
<tr><td>NC</td><td>42, 48</td><td></td><td>No connect pins. Leave open.</td></tr>
<tr><td>RSD</td><td>45</td><td>I</td><td>Audio receive serial data.</td></tr>
<tr><td>RWS</td><td>46</td><td>I</td><td>Audio receive frame sync.</td></tr>
<tr><td>RBCK</td><td>47</td><td>I</td><td>Audio receive bit clock.</td></tr>
<tr><td>XIN</td><td>49</td><td>I</td><td>Crystal input.</td></tr>
<tr><td>XOUT</td><td>50</td><td>O</td><td>Crystal output.</td></tr>
<tr><td>AVEE</td><td>51</td><td>I</td><td>Analog power for PLL.</td></tr>
<tr><td>DMA[11:0]</td><td>66:61, 58:53</td><td>O</td><td>DRAM address bus [11:0].</td></tr>
<tr><td>DCAS#</td><td>69</td><td>O</td><td>DRAM column address strobe.</td></tr>
<tr><td>DOE#</td><td rowspan="2">70</td><td>O</td><td>DRAM output enable.</td></tr>
<tr><td>DSCK_EN</td><td>O</td><td>DRAM clock enable.</td></tr>
<tr><td>DWE#</td><td>71</td><td>O</td><td>DRAM write enable.</td></tr>
<tr><td>DRAS#</td><td>72</td><td>O</td><td>DRAM row address strobe.</td></tr>
<tr><td>DMBS0</td><td>73</td><td>O</td><td>SDRAM bank select 0.</td></tr>
<tr><td>DMBS1</td><td>74</td><td>O</td><td>SDRAM bank select 1.</td></tr>
<tr><td>DB[15:0]</td><td>96:93, 90:85, 82:77</td><td>I/O</td><td>DRAM data bus [15:0].</td></tr>
<tr><td>DCS[1:0]#</td><td>97,100</td><td>O</td><td>SDRAM chip select [1:0].</td></tr>
<tr><td>DQM</td><td>101</td><td>O</td><td>Data input/output mask.</td></tr>
<tr><td>DSCK</td><td>102</td><td>O</td><td>Output clock to SDRAM.</td></tr>
<tr><td>DCLK</td><td>105</td><td>I</td><td>27 MHz clock input to PLL.</td></tr>
<tr><td>YUV0</td><td rowspan="3">106</td><td>O</td><td>YUV0 pixel output data.</td></tr>
<tr><td>CAMIN2</td><td>I</td><td>Camera input 2.</td></tr>
<tr><td>UDAC</td><td>O</td><td>Video DAC output.
<table><tr><th>Mode</th><th>YDAC</th><th>UDAC</th><th>VDAC</th><th>CDAC</th></tr><tr><td>A</td><td>Y</td><td>C</td><td>Composite</td><td>C</td></tr><tr><td>B</td><td>Y</td><td>Composite</td><td>Composite</td><td>C</td></tr><tr><td>C</td><td>Y</td><td>U</td><td>Composite</td><td>V</td></tr><tr><td>D</td><td>Y</td><td>U</td><td>C</td><td>V</td></tr></table>Y: Luma component for YUV and Y/C processing.
C: Chrominance signal for Y/C processing.
U: Chrominance component signal for YUV mode.
V: Chrominance component signal for YUV mode.</td></tr>
</table>

Table 1 ES60x8 Pin Description (Continued)

Name	Number	I/O	Definition
YUV1	107	O	YUV1 pixel output data.
VREF		I	Internal voltage reference to video DAC. Bypass to ground with 0.1 µF capacitor.
YUV2	108	O	YUV2 pixel output data.
CDAC		O	Video DAC output. Refer to description and matrix for UDAC pin 106.
YUV3	109	O	YUV3 pixel output data.
COMP		I	Compensation input. Bypass to ADVEE with 0.1 µF capacitor.
YUV4	110	O	YUV4 pixel output data.
RSET		I	DAC current adjustment resistor input.
ADVEE	111	I	Analog power for video DAC.
YUV5	113	O	YUV5 pixel output data.
YDAC		O	Video DAC output. Refer to description and matrix for UDAC pin 106.
YUV6	114	O	YUV6 pixel output data.
VDAC		O	Video DAC output. Refer to description and matrix for UDAC pin 106.
YUV7	115	O	YUV7 pixel output data.
CAMIN3		I	Camera YUV 3.
PCLK2XSCN	116	I/O	27-MHz video output pixel clock.
CAMIN4		I	Camera YUV 4.
PCLKQSCN	117	O	13.5-MHz video output pixel clock.
CAMIN5		I	Camera YUV 5.
VSYNC#	118	I/O	Vertical sync, active low.
CAMIN6		I	Camera YUV 6.
HSYNC#	119	I/O	Horizontal sync, active low.
CAMIN7		I	Camera YUV 7.
HD[5:0]	127:122	I/O	Host data I/O [5:0].
DCI[5:0]		I/O	DVD channel data I/O [5:0].
AUX1[5:0]		I/O	Aux1 data I/O [5:0].
HD[6]	128	I/O	Host data I/O [6].
DCI[6]		I/O	DVD channel data I/O [6].
AUX1[6]		I/O	Aux1 data I/O [6].
VFD_DOUT		I	VFD data output.
HD[7]	131	I/O	Host data I/O [7].
DCI[7]		I/O	DVD channel data I/O [7].
AUX1[7]		I/O	Aux1 data I/O [7:0].
VFD_DIN		I	VFD data input.
HD[8]	132	I/O	Host data bus 8.
DCI_FDS#		I/O	DVD input sector start.
AUX2[0]		I/O	Aux2 data I/O 0.
VFD_CLK		I	VFD clock input.
HD[9]	133	I/O	Host data bus line 9.
AUX2[1]		I/O	Aux2 data I/O [1] when selected.
SQSQ		I	Subcode-Q data.
HD[10]	134	I/O	Host data bus line10.
AUX2[2]		I/O	Aux2 data I/O [2] when selected.
SQSK		I	Subcode-Q clock.

Table 1 ES60x8 Pin Description (Continued)

Name	Number	I/O	Definition
HD[11]	135	I/O	Host data bus line11.
AUX2[3]		I/O	Aux2 data I/O [3] when selected.
IRQ		O	IRQ output.
HD[12]	136	I/O	Host data bus line12.
AUX2[4]		I/O	Aux2 data I/O [4] when selected.
C2PO		I	C2PO error correction flag from CD-ROM.
HD[13]	137	I/O	Host data bus line13.
AUX2[5]		I/O	Aux2 data I/O [5] when selected.
SP		I	16550 UART serial port input.
HD[14]	140	I/O	Host data bus line14.
AUX2[6]		I/O	Aux2 data I/O [6] when selected.
SQSI		I	Subcode-Q sync.
HD[15]	141	I/O	Host data bus line15.
AUX2[7]		I/O	Aux2 data I/O [7] when selected.
IR		I	IR remote control input.
HWRQ#	142	O	Host write request.
DCI_REQ#		O	DVD control interface request.
AUX4[1]		I/O	Aux4 data I/O 1.
HRRQ#	143	O	Host read request.
AUX4[0]		I/O	Aux4 data I/O 0.
HIRQ	144	I/O	Host interrupt.
DCI_ERR#		I/O	DVD channel data error.
AUX4[7]		I/O	Aux4 data I/O 7.
HRST#	145	O	Host reset.
AUX3[5]		I/O	Aux3 data I/O 5.
HIORDY	146	I	Host I/O ready.
AUX3[3]		I/O	Aux3 data I/O 3.
HWR#	149	I/O	Host write.
DCI_CLK		I/O	DVD channel data clock.
AUX4[5]		I/O	Aux4 data I/O 5.
HRD#	150	O	Host read.
DCI_ACK#		O	DVD channel data valid.
AUX4[6]		I/O	Aux4 data I/O 6.
HIOCS16#	151	I	Device 16-bit data transfer.
CAMCLK		I	Camera port pixel clock input.
AUX3[4]		I/O	Aux3 data I/O 4.
HCS1FX#	152	O	Host select 1.
AUX3[7]		I/O	Aux3 data I/O 7.
HCS3FX#	153	O	Host select 3.
AUX3[6]		I/O	Aux3 data I/O 6.
HA[2:0]	158, 155:154	I/O	Host address bus.
AUX4[4:2]		I/O	Aux4 data I/Os [4:2].
AUX[1:0]	160	I/O	Auxiliary ports 1:0.

Table 1 ES60x8 Pin Description (Continued)

Name	Number	I/O	Definition
AUX[2]	162	I/O	Auxiliary port 2.
IOW#		O	I/O Write strobe.
AUX[3]	165	I/O	Auxiliary port 3.
IOR#		O	I/O Read strobe.
AUX[7:3]	169:166	I/O	Auxiliary ports 7:3.
LOE#	170	O	Device output enable.
LCS[3:0]#	176:173	O	Chip select [3:0].
LD[15:0]	197:194, 191:185, 182:178	I/O	EPROM device data bus.
LWRLL#	198	O	Device low-byte write enable.
LWRHL#	199	O	Device high-byte write enable.
CAMIN0	202	I	Camera YUV 0.
CAMIN1	203	I	Camera YUV 1.

4.2 Technical data for disc tray DSL-710A

1.Connector, Socket

There are five connectors at the back of the drive.

DC Power Connector (Section 1)

Interface Connector (Section 2)

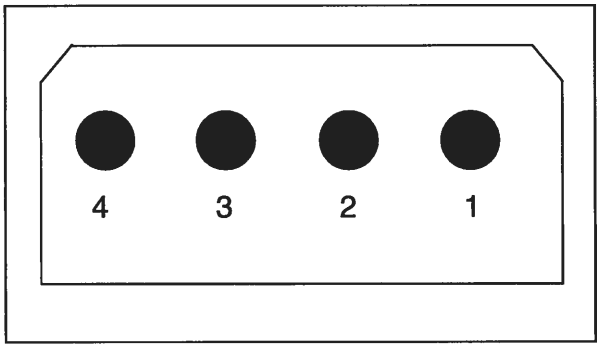
* Please do not use the other connectors. These are only for manufacturer.

1. D.C. Power Supply

A 4-pin shrouded, keyed male connector is used to provide the D.C. Power.

The pin assignment is described below

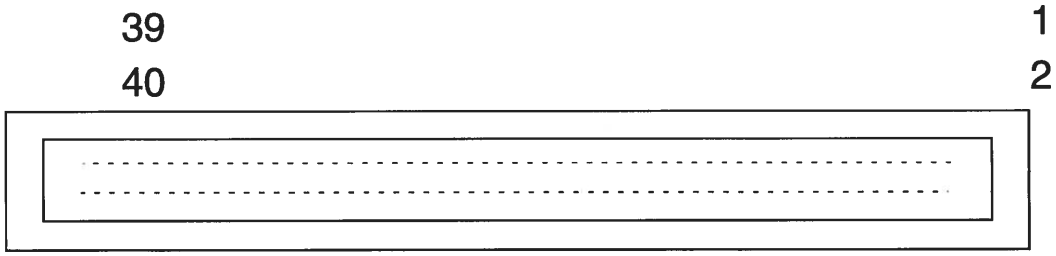
PIN	DC VOITS
1	+12V
2	GND
3	GND
4	+5V



2.Interface Connector

A 39-pin male, unshielded, shrouded, keyed connector are applied.

Please refer to Section 8-2-3 regarding its pin definition



2.POWER

1).Voltage

+5V DC with ±5% tolerance, less than 100mVp-p Ripple Voltage

+12V DC with ±10% tolerance, less than 150mVp-p Ripple Voltage

2).Current

Continuous Reading

+5V DC 800mA (Average)

+12V DC 300mA (Average)

Seeking & Spin up

+5V DC1.0A (Maximum)

+12V DC 0.7A (Maximum)

3).Notice

If Buyer does not follow the specification of ELECTRICAL POWER described on the article 8 above, the loader's playability could be deteriorated or internal damages may occur to the loader. In that case, the warranty service shall be avoided definitely

3.Host Interface

- The interface is based on X3T10/2008D, SFF-8020 Rev.1.2 and SFF-8090 Rev.0.99 (Small Form Factor Committee Specification of ATA-Packet Interface for DVD-ROM)
- 36 types of commands are usable including DVD-ROM unique commands.
- The 512Kbytes data buffer handles both high speed and low speed data transmission.
- The largest block size on playback is 2,352 Bytes.
- The data length for each block is changeable by command.

1. I/O Cable Parameter

Cable parameters are shown below.

Items	Min.	Max.
Cable length	-	0.46m
Drive I_{OL} sink current for 5V operation	4mA	-
Drive I_{OL} sink current for 3.5V operation	4mA	-
Drive I_{OH} source current	-	-400 □
Cable capacitor loading	-	200 □

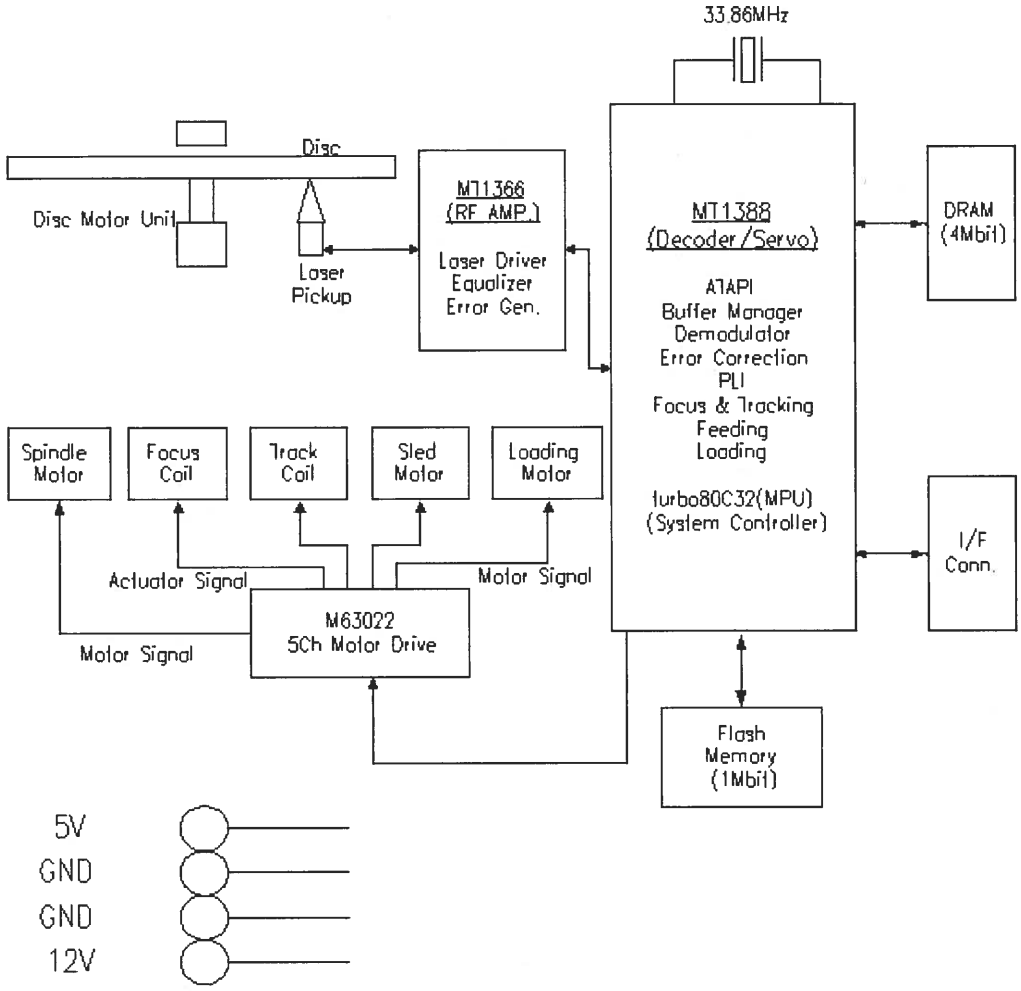
2. Signal Summary

The physical interface consists of single ended TTL compatible receivers.

3. Connector Pin Definition

I/F Signals	I/O Pin #	I/F Signals	I/O Pin #
Reset	1	DMARQ	21
GND	2	GND	22
DD7	3	DIOW	23
DD8	4	GND	24
DD6	5	DIOR	25
DD9	6	GND	26
DD5	7	IORDY	27
DD10	8	CSEL	28
DD4	9	DMACK	29
DD11	10	GND	30
DD3	11	INTRQ	31
DD12	12	IOCS16	32
DD2	13	DA1	33
DD13	14	PDIAG	34
DD1	15	DA0	35
DD14	16	DA2	36
DD0	17	CS1FS	37
DD15	18	CS3FS	38
GND	19	DASP	39
NC	20	GND	40

4.DSL-710A Block Diagram



4.3 Technical data for MPEG decoder/DVD servo processor MT1369AE

1.FEATURES

■ Super Integration DVD player single chip

- Servo controller and data channel processing
- MPEG-1/MPEG-2/JPEG video decoding
- AC-3/DTS/DVD-Audio/MP3 audio decoding
- Unified track buffer and A/V decoding buffer
- Video processing for scaling and video quality enhancement
- OSD & Sub-picture decoding
- Built-in clock generator

■ Speed Performance on Servo and Decoding

- DVD-ROM up to 8XS
- CD-ROM up to 24XS

- Analog data slicer for small jitter capability
- Built-in high performance data PLL for channel data demodulation
- EFM/EFM+ data demodulation
- Enhanced channel data frame sync protection & DVD-ROM sector sync protection

■ Servo Control and Spindle Motor Control

- Programmable frequency error gain and phasee error gain of spindle PLL to control spindle motor on CLV and CAV mode
- Provide a varipitch speed control for CLV and CAV mode
- Built-in ADCs and DACs for digital servo control
- Provide 2 general PWM
- Tray control can be PWM output or digital output
- Built-in DSP for digital servo control

■ Host Micro controller

- Built-in 8032 micro controller
- Built-in internal 373 and 8-bit programmable lower address port
- 256-bytes on-chip RAM
- Up to 1M bytes FLASH-programming interface
- Supports 5/3.3-Volt. FLASH interface
- Supports power-down mode
- Supports additional serial port

■ DVD-ROM/CD-ROM Decoding Logic

- Supports CD-ROM Mode 1, CD-ROM XA mode Form 1, CD-ROM XA Mode 2Form 2, and CD-DA formats
- High-speed ECC logic capable of correcting one error per each P

- 8-bit C2 Pointer counter
- Decoder Error Notification Inten upt that signals various decoder errors
- Provide error correction acceleration

■ Buffer Memory Controller

- Supports 16Mb/32Mb/64Mb SDRAM
- Supports 16-bit/32-bit SDRAM data bus interface
- Build in a DRAM interface programmable clock to optimize the DRAM performance
- Provide the self-refresh mode SDRAM
- Programmable DRAM access cycle and refresh cycle timings
- Block-based sector addressing
- Programmable buffering counter for buffer status tracking
- Maximum DRAM speed is 133MHz
- Support 5/3.3-Volt. DRAM Interface

■ Video Decode

- Decodes MPEG1 video and MPEG2 main level, main profile video (720/480 and 720×576)
- Maximum input bit-rate of 15Mbits/sec
- Smooth digest view function with 1, P and B picture decoding
- Baseline, extended-sequential and progressive JPEG image decoding
- Support CD-G titles

■ Video/SPU/HLI Processor

- Arbitrary ratio vertical/horizontal scaling of video, from 0.25X to 256X
- 256/16/4/2-color bitmapp format OSD,
- 256/16 color RLC format OSD
- Automactic scrolling of OSD image
- Warp mode of OSD can reduce memory required
- Dual Sub-picture decoder
- Provides 4-color/32×32-pixel hardware cursor
- Fade-in, Fade out, and Wipe functions as specified in the DVD Audio Specification and other slide show transition effects

■ Audio Processing

  - Decoder format suppouts.
  - Dolby Digtal (AC-3) decoding
  - DTS decodirg
  - MLP decoding for DVD-Audio
  - -MPEG-1 layer 1/layer 2 audeo decoding
  - MPEG-2 layer1/layer2 2-channel audio decoding
  - Dolby Pro Logic decoding

- Up to 6 channel linear PCM output for DVD Audio/DVD Video
- Downmix function
- Support IEC 60958/61937 output

- PCM/bit stream/mute mode
- -Custom LEC latency up to 2 frames

- Pink noise and white noise generator
- Karaoke functions
  - Microphone echo with adjustable echo level, echo-depth and delay length
  - Microphone tone control with three custom second-order IIR filter
  - Vocal mute/vocal assistant
  - Key shift up to +/-8 keys controlled by 1/2 key
- Channel equalizer
- 3D surround processing include virtual surround and speaker separation
- Power-down control

■ Outline

- 208-pin LQFPP package
- 3.3/26-Volt Bual pperating votages

2. Pin DEFINITIONS

Pin	Symbol	Type	Description
1	IREF	Analog Input	Current reference input. It generate reference current for data PLL. Connect an external 100K resistor to this pin and PLLVSS.
2	PLLVSS	Ground	Ground for data PLL and related analog circuitry
3	LPIOP	Analog Output	Positive output of the low pass filter
4	LPION	Analog Output	Negative output of the low pass filter
5	LPFON	Analog Output	Negative output of loop filter amplifier
6	LPFIP	Analog Input	Positive input of loop filter amplifier
7	LPFIN	Analog Input	Negative input of loop filter amplifier
8	LPFOP	Analog Output	Positive output of loop filter amplifier
9	JITFO	Analog Output	RF jitter meter output
10	JITFN	Analog Input	Negative input of the operation amplifier for RF jigger meter
11	PLLVDD3	Power	Power for data PLL and related analog circuitry
12	FOO	Analog Output	Focus servo output. PDM output of focus servo compensator
13	TRO	Analog Output	Tracking servo output PDM output of focus servo compensator
14	TROPENPWM	Analog Output	Tracking servo output PDM output of tracking servo compensator Tray open output, controlled by microcontroller. This is PWM output for TRWMEN27hRW2=1 or is digitat output for TRWMEN27hRW2=0
15	PWMOUT 2	Analog Output	The general PWM output
16	DVD2	Power	2.5V pwoer
17	DMO	Analog Output	Disk motor control output PWM output
18	FMO	Analog Output	Peed motor control. PWM cutput
19	FG	Inout, Pull Up	Motor Hall sensor input
20	DVSS	Inout, Pull Up	Ground
21	HIGHA0	Inout, Pull Up	Microcontroller address 8
22	HIGHA1	Inout, Pull Up	Microcontroller address 9
23	HIGHA2	Inout, Pull Up	Microcontroller address 10
24	HIGHA3	Inout, Pull Up	Microcontroller address 11

Pin	Symbol	Type	Description
25	HIGHA4	Inout, Pull Up	Microcontroller address 12
26	HIGHA5	Inout, Pull Up	Microcontroller address 13
27	DVSS	Ground	Ground
28	HIGHA6	Inout, Pull Up	Microcontroller address 14
29	HIGHA7	Inout, Pull Up	Microcontroller address 15
30	AD7	Inout	Microcontroller address/data 7
31	AD6	Inout	Microcontroller address/data 6
32	AD5	Inout	Microcontroller address/data 5
33	AD4	Inout	Microcontroller address/data 4
34	DVDD3	Power	3.3V power
35	AD3	Inout	Microcontroller address/data 3
36	AD2	Inout	Microcontroller address/data 2
37	AD1	Inout	Microcontroller address/data 1
38	AD0	Inout	Microcontroller address/data 0
39	IOA0	Inout, Pull Up	Microcontroller address 0/GPIO0
40	IOA1	Inout, Pull Up	Microcontroller address 1/GPIO1
41	DVDD2	Power	2.5V power
42	IOA2	Inout, Pull Up	Microcontroller address 2/GPIO2
43	IOA3	Inout, Pull Up	Microcontroller address 3/GPIO3
44	IOA4	Inout, Pull Up	Microcontroller address 4/GPIO4
45	IOA5	Inout, Pull Up	Microcontroller address 5/GPIO5
46	IOA6	Inout, Pull Up	Microcontroller address 6/GPIO6
47	IOA7	Inout, Pull Up	Microcontroller address 7/GPIO7
48	A16	Output	Flash address 16
49	A17	Output	Flash address 17
50	IOA18	Inout	Flash address 18/GPIO10
51	KOA19	Inout	Flash address 19/GPIO11
52	DMVSS	Ground	Ground for DRAM clock circuitry
53	DMVDD3	Power	Powerfor DRAM clock circuitry
54	ALE	Inout, Pull Up	Microcontroller address latch enable
55	LOOE#	Inout	Flash output enable, active low/GPIO13
56	LOWR#	Inout	Flash write enable, active low/GPIO17
57	LOCS#	Inout, Pull Up	Flash chip select, active low/GPIO18
58	DVSS	Ground	Ground
59	UP1-2	Inout, Pull Up	Microcontroller port1-2
60	UP1-3	Inout, Pull Up	Microcontroller port1-3
61	UP1-4	Inout, Pull Up	Microcontroller port1-4
62	UP1-5	Inout, Pull Up	Microcontroller port1-5
63	UP1-6	Inout, Pull Up	Microcontroller port1-6
64	DVDD3	Power	3.3v power
65	UP1-7	Inout, Pull Up	Microcontroller port1-7
66	UP3-0	Inout, Pull Up	Microcontroller port3-0
67	UP3-1	Inout, Pull Up	Microcontroller port3-1

Pin	Symbol	Type	Description
68	INT0#	Inout, Pull Up	Microcontroller interrupt 0,active low
69	IR	Input	IR control signal input
70	DVDD2	Power	2.5v power
71	UP3-4	Inout	Microcontroller port3-4
72	UP3-5	Inout	Microcontroller port3-5
73	UWR#	Inout, Pull Up	Microcontroller write strobe,active low
74	URD#	Inout, Pull Up	Microcontroller read strobe,active low
75	XTALI	Input	Crystal input,27MHz
76	XTALO	Output	Crystal output
77	DVSS	Ground	Ground
78	RD7	Inout	DRAM data7
79	RD6	Inout	DRAM data6
80	RD5	Inout	DRAM data5
81	RD4	Inout	DRAM data4
82	DVDD2	Power	2.5v power
83	RD3	Inout	DRAM data3
84	RD2	Inout	DRAM data2
85	RD1	Inout	DRAM data1
86	RD0	Inout	DRAM data0
87	RWE#	Output	DRAM write enable,active low
88	CAS#	Output	DRAM column address strobe,active low
89	RAS#	Output	DRAM row address strobe,active low
90	RCS#	Output	DRAM chip select,active low
91	BA0	Output	DRAM bank address 0
92	DVDD3	Power	3.3v power
93	RD15	Inout, Pull Up/Down	DRAM data 15
94	RD14	Inout, Pull Up/Down	DRAM data 14
95	RD13	Inout, Pull Up/Down	DRAM data 13
96	RD12	Inout, Pull Up/Down	DRAM data 12
97	DVSS	Ground	Ground
98	RD11	Inout, Pull Up/Down	DRAM data 11
99	RD10	Inout, Pull Up/Down	DRAM data 10
100	RD9	Inout, Pull Up/Down	DRAM data 9
101	RD8	Inout, Pull Up/Down	DRAM data 8
102	VPVDD3	Power	Power for varipitch VCO circuitry
103	VCOCIN	Analog Input	Connect capacitor for compensator loop filter
104	VPVSS	Ground	Ground for varipitch VCO circuitry
105	DVSS	Ground	Ground
106	CLK	Output	DRAM clock
107	CLE	Output	DRAM clock enable
108	RA11	Output	DRAM address bit 11 or audio serial data 3(channel3/8)
109	RA9	Output	DRAM address 9
110	RA8	Output	DRAM address 8

Pin	Symbol	Type	Description
111	DVDD2	Power	2.5v power
112	RA7	Output	DRAM address 7
113	RA6	Output	DRAM address 6
114	RA5	Output	DRAM address 5
115	RA4	Output	DRAM address 4
116	DVSS	Ground	Ground
117	DQM1	Output	Mask for DRAM input/output byte 1
118	DQM0	Output	Mask for DRAM input/output byte 0
119	BA1	Output	DRAM bank address 0
120	RA10	Output	DRAM address 10
121	DVDD2	Power	2.5v power
122	RA0	Output	DRAM address 0
123	RA1	Output	DRAM address 1
124	RA2	Output	DRAM address 2
125	RA3	Output	DRAM address 3
126	DVSS	Ground	Ground
127	RD31	Inout, Pull Up/Down	DRAM data 31
128	RD30	Inout, Pull Up/Down	DRAM data 30
129	RD29	Inout, Pull Up/Down	DRAM data 29
130	RD28	Inout, Pull Up/Down	DRAM data 28
131	DVDD3	Power	3.3v power
132	RD27	Inout, Pull Up/Down	DRAM data 27
133	RD26	Inout, Pull Up/Down	DRAM data 26
134	RD25	Inout, Pull Up/Down	DRAM data 25
135	RD24	Inout, Pull Up/Down	DRAM data 24
136	DVSS	Ground	Ground
137	DQM3	Output	Mask for DRAM input/output byte 3
138	DQM2	Output	Mask for DRAM input/output byte 2
139	RD23	Inout, Pull Up/Down	DRAM data 23
140	RD22	Inout, Pull Up/Down	DRAM data 22
141	DVDD2	Power	2.5v power
142	RD21	Inout, Pull Up/Down	DRAM data 21
143	RD20	Inout, Pull Up/Down	DRAM data 20
144	RD19	Inout, Pull Up/Down	DRAM data 19
145	RD18	Inout, Pull Up/Down	DRAM data 18
146	DVSS	Guound	Ground
147	RD17	Inout, Pull Up/Down	DRAM data 17
148	RD16	Inout, Pull Up/Down	DRAM data 16
149	ABCK	Output	Audio bit clock
150	ALRCK	Inout, Pull Down	(1)Audio left/right channel clock (2)Trap value in power-on reset. 1:use external 373, 0:use internal 373
151	DVDD3	Power	3.3V power

Pin	Symbol	Type	Description
152	ASDATA0	Inout, Pull Down	Audio serial data 0 (left/right channel)
153	ASDATA1	Inout, Pull Down	Audio serial data 1 (surround left/surrot/nd right channel)
154	ASDATA2	Inout, Pull Down	Audio sirial data 2 (center/LFE channel)
155	ACLK	Ground	Audio DAC master clock (384/256 audio sample freouencl)
156	APVDD8	Power	Power for audio clock circurry
157	APVSS	Ground	Ground for audio clock circatry
158	SPDIE	Output	SPDIF output
159	MC-DAT	Input	Miorophone serial input
160	BLANK#	Inout	Video blank aree, active low/GPIO14
161	VSYN	Inout	Verical sync/GPLO16
162	HSYN	Inout	Horizontal sync/GPIO15
163	DVSS	Ground	Ground
164	YUV0	Output	Video data output bit 0
165	YUV1	Output	Video data output bit 1
166	YUV2	Output	Video data output bit 2
167	YUV3	Output	Video data output bit 3
168	YUV4	Output	Video data output bit 4
169	DVDD2	Power	2.5V power
170	YUV5	Output	Video data output bit 5
171	YUV6	Output	Video data output bit 6
172	YUV7	Output	Video data output bit 7
173	ICE	Input, Pull Down	Microcontroller ICE mode enable
174	PRST	Input, Pull Down	Power on reset input, active high
175	DVSS	Ground	Ground
176	VFO13	Output	The 1st, 3rd VFO pulse output of DVD-RAMIO header
177	IDGATE	Output	DVD-RAM ID header detect signal output
178	DVDD3	Power	3.3V power
179	UDGATE	Output	DVD-RAM recording data gate singal output
180	WOBSI	Input	Wobble signal output
181	SDATA	Output	RF serial data output
182	SDEN	Output	RF serial data latch enable
183	SLCK	Output	RF serial clock output
184	BDO	Input, Pull Down	Flag of defect data status input
185	DVDD3	Power	3.3V power
186	PDMVDD3	Power	Power for PDM circuitry
187	PWMVREF	Analog Input	A reference voltage input for PWM circuitry. A typical value of 2.8v
188	PWM2VREF	Analog Input	A reference voltage input for PWM circuitry. A typical value of 1.4v
189	PDMVSS	Ground	Ground for PDM circuitry
190	ADCVSS	Ground	Ground for ADC circuitry
191	ADIN	Analog Input	General AVD input
192	RFSUBI	Analog Input	RF subtraction signal input terminal
193	TEZISLV	Analog Input	Tracking error zero crossing low pass input
194	TEI	Analog Input	Tracking error input

Pin	Symbol	Type	Description
195	CSO	Analog Input	Central servo input
196	FEI	Analog Input	Focus error input
197	RFLEVEL	Analog Input	Sub beam abb input or RFRP low pass input
198	RFRP-DC	Analog Input	RF ripple detect input
199	RFRP-AC	Analog Input	RF ripple detect input(through AC coupling)
200	RFRPSLV	Analog Input	RFRP slice level input
201	HRFZC	Analog Input	High frequency RF rippie zero crossing
202	ADCVDD8	Power	Power for ADC circuitry
203	RADTSI VP	Analog Output	Prsrtive RF date slicer leve output
204	SCON	Analog Output	Negative analog slicer current output
205	SCOP	Analog Output	Pwsitive analog slicer currert ouput
206	RFDTSLVN	Analog Output	Negative RF data slicer reve output
207	RFIN	Analog Input	Negative input of RF differe tial signa
208	RFP	Analog Input	Positive input of RF differenrial signal

4.4 Technical data for RF amplifier MT1336E

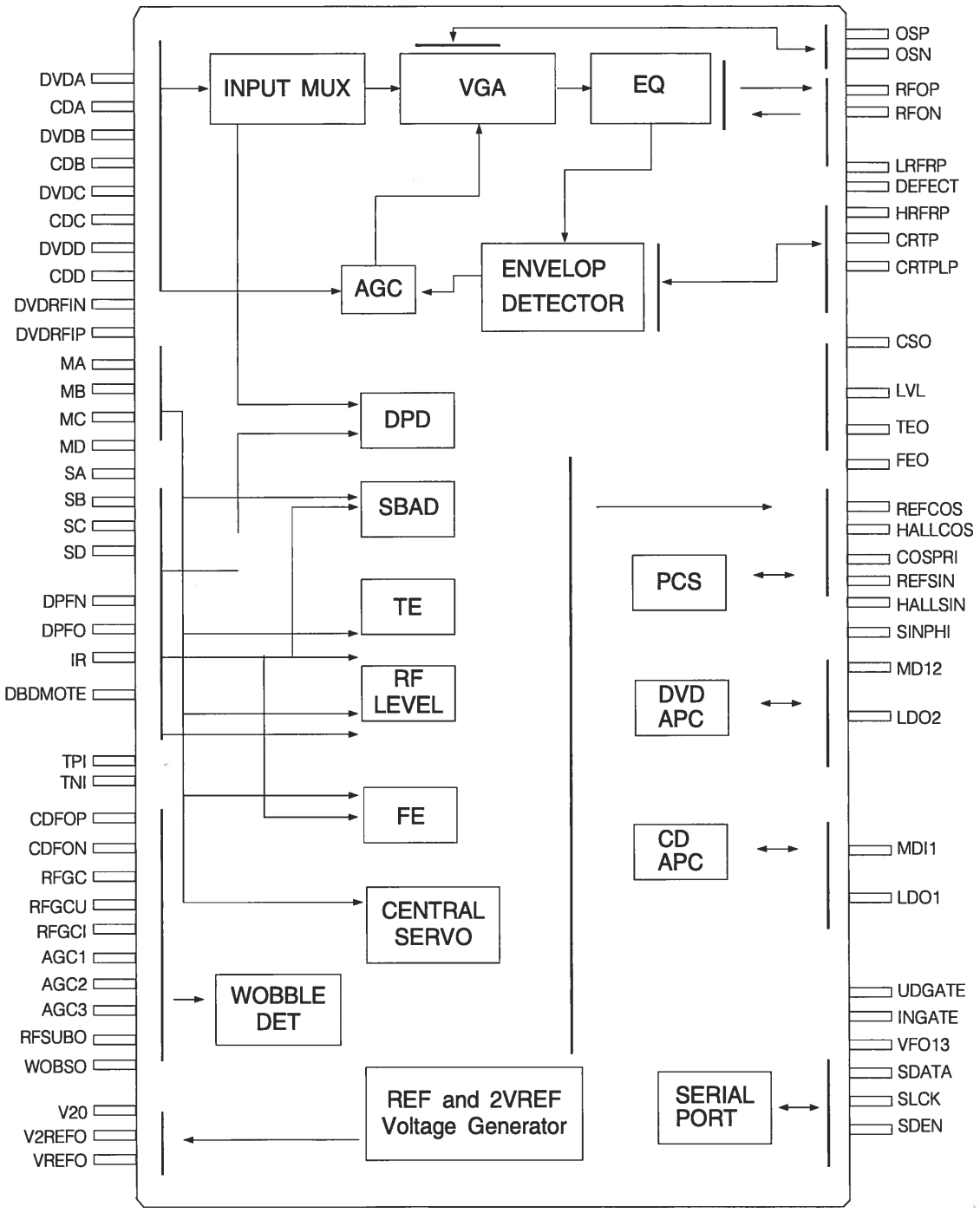
1.GENERAL DESCRIPTION

MT1336 is a high performance CMOS analog front-end IC for both CD_ROM driver up to 48XS and DVD_ROM driver up to 16XS. It also supports DVD_RAM lead up to 4XS Version 2. It contains servo amplifiers to generate focusing error, 3-beam tracking error, 1 beam radial push-pull signal, RF level and SBAD for servo functions. It also includes DPD tracking error signal for DVD_ROM application. For DVD_RAM disks, there are also Differential Push-Pull (DPP) method for generating tracking signal and Differential Astigmatic Detection (DAD) for processing focusing signal. Programmable equalizer and AGC circuits are also incorporated in this chip to optimize read channel performance. In addition, this chip has dual automatic laser power control circuits for DVD-ROM (DVD-RAM) and CD-ROM separately and reference voltage generators to reduce external components. Programmable functions are implemented by the access of internal register through bi-directional serial port to configure modes selection.

2. FEATURES

- RF equalizer with programmable f from 3MHZ to 70MHZ and programmable boost from 3dB to 13Db.
- MT1336 supports atleast eight different kinds of pick-up heads with versatile input configuration for both RF input stages and service signal blocks.
- 3 beams tracking error signal generator for CD_ROM application.
- One beam differential phase tracking error (DPD)generator for DVD_ROM application.
- Differential push pull tracking error (DPP) generator for DVD_RAM application.
- Focusing error signal generator for CD-ROM, DVD-ROM and DVD-RAM (DAD method).
- RF level signal generator.
- Sub-beam added signal for 3 beams CD-ROM.
- One beam push-pull signal generator for central servo application.
- High speed RF envelop detection circuit with bandwidth up to 400KHZ for CD-ROM.
- Defect and Blank detection circuits.
- Dual automatic laser power control circuits with programmable level of LD monitor voltage.
- Vref=1.4V voltage and V2ref=2.8V voltage generators.
- V20=2.0V voltage for pick-up head reference.
- Bi-directional serial port to access internal registers.
- 128-pin LQFP.

3. MT1336 FUNCTION BLOCKS DIAGRAM



4. MT1336 PIN DESCRIPTIONS

Pin Numbers	Symbol	Type	Description
LQFP128			
RF Flag Interface			
23	DEFECT	Digital Output	Flag of bad data output status
RF SIO interface			
56	SCLK	Digital Input	RF serial clock input
58	SDEN	Digital Input	RF serial data enable
59	SDATA	Digital IO	RF serial data IO
60	RST	Digital input	Reset (active high)
55	XCK16M	Digital Input	16.9MHz for verification
RF SERVO interface			
40	WD_ATE	Digital Input	Control signal for DVD-RAM
	RGATE	Digital Input	Control signal for DVD-RAM
38	WFD13	Digital Input	DVD-RAM Header signal
RF			
100	DVDA	Analog Input	AC coupled DVD RF signal input A
99	DVDB	Analog Input	AC coupled DVD RF signal input B
98	DVDC	Analog Input	AC coupled DVD RF signal input C
97	DVDD	Analog Input	AC coupled DVD RF signal input D
95	DVDRFIN	Analog Input	AC coupled DVD RF signal input RFIN
96	DVDRFIP	Analog Input	AC coupled DVD RF signal input RFIP
94	CDA	Analog Input	AC coupled CD RF signal input A
93	CDB	Analog Input	AC coupled CD RF signal input B
92	CDC	Analog Input	AC coupled CD RF signal input C
91	CDD	Analog Input	AC coupled CD RF signal input D
90	OSN	Analog	RF Offset cancellation capacitor connecting
89	OSP	Analog	RF Offset cancellation capacitor connecting
85	CEQP	Analog	RF Offset cancellation capacitor connecting
84	CEQN	Analog	RF Offset cancellation capacitor connecting
88	RFGC	Analog	RF AGC loop capacitor connecting for DVD-ROM

87	RFGCU	Analog	RF AGC loop capacitor connecting for DVD-RAM
86	RFGCI	Analog	RF AGC loop capacitor connecting for DVD-RAM
101	MA	Analog Input	DC coupled DVD-RAM main-beam RF signal input A
102	MB	Analog Input	DC coupled DVD-RAM main-beam RF signal input B
103	MC	Analog Input	DC coupled DVD-RAM main-beam RF signal input C
104	MD	Analog Input	DC coupled DVD-RAM main-beam RF signal input D
105	SA	Analog Input	DC coupled DVD RAM sub-beam RF signal input A
106	SB	Analog Input	DC coupled DVD-RAM sub-beam RF signal input B
110	SC	Analog Input	DC coupled DVD-RAM sub-beam RF signal input C
111	SD	Analog Input	DC coupled DVD-RAM sub-beam RF signal input D
108	IR	Analog	External current bias resistor (R=20K)
119	AGC1	Analog	Wobble AGC loop1 capacitor
121	AGC2	Analog	Wobble AGC loop2 capacitor
122	AGC3	Analog	Wobble AGC loop3 capacitor
127	RFSUBO	Analog output	Header push-pull RF output signal
	WOBSO	Digital output	Wobble signal output
6	RFOP	Analog output	RF positive output
7	RFON	Analog output	RF negative output
TRACKING ERROR			
32	DPFN	Analog	DPD amplifier negative input
33	DPFO	Analog	DPD amplifier output
61	DPDMUTE	Digital input	DPD mute control input
116	TNI	Analog Input	3 beam satellite PD signal negative input E
115	TPI	Analog Input	3 beam satellite PD signal positive input F
21	TEO	Analog Output	Tracking error output
FOCUSING ERROR & RF LEVEL & CENTRAL SERVO SIGNAL			
112	CDFOP	Analog Input	CD focusing error positive input
113	CDFON	Analog Input	CD focusing error negative input
18	FEO	Analog Output	Focusing error output
19	LVL	Analog Output	RF level output
20	CSO	Analog output	Central servo signal output
ALPC			

124	MDI1	Analog Input	Laser power monitor input
125	LDO1	Analog Output	Laser driver output
123	MDI2	Analog Input	Laser power monitor input
126	LDO2	Analog Output	Laser driver output
RF RIPPLE			
26	CRTP	Analog	RF top envelop filter capacitor connecting
27	CRTPLP	Analog	Defect level filter capacitor connecting
25	HRFRP	Analog output	High frequency RF ripple output or Blank detector's output
24	LRFRP	Analog output	Low frequency RF ripple output
POWER			
67, 69	AVDD	Power	Master PLL Filter power
[illegible]	AGND	GND	GND for Master PLL Filter
[illegible]	AVDD	Power	DPD Power
[illegible]	AGND	GND	DPD GND
[illegible]	AVDD	Power	RF path Power
[illegible]	AGND	GND	RF path GND
[illegible]	SVDD	Power	Servo Power
[illegible]	SGND	GND	Servo GND
2,120	WAVDD	Power	Wobble Power
128,118	WAGND	GND	Wobble GND
5	AVDDO	Power	Power for RF output
8	AGNDO	GND	GND for RF output
14	AVDDT	Power	Power for Trimming PAD
12	AGNDT	GND	GND for Trimming PAD
22	VDDP	Power	Peak Detection Power
31	GNDP	GND	Peak Detection GND
37,54	VDD	Power	Serial I/O Power
39,57	GND	GND	Serial I/O GND
REFERENCE VOLTAGE			
16	VREFO	Analog output	Reference voltage 1.4V
15	V2REFO	Analog output	Reference voltage 2.8V
17	V20	Analog Output	Reference voltage 2.0V

ALPC TRIMMING			
9	TM1	Analog input	Trimming pin for ALPC1
10	TM2	Analog input	Trimming pin for ALPC1
11	TM3	Analog input	Trimming pin for ALPC2
13	TM4	Analog input	Trimming pin for ALPC2
HIGH SPEED TRACK COUNTING			
29	TRLP	Analog	Low-pass filter capacitor connecting
28	TRLPA	Analog	Low-pass filter capacitor connecting
30	HTRC	Digital output	High speed track counting digital output
PCS			
74	HALLSIN	Analog input	Negative input of amplifier for hall sensor signal
75	REFSIN	Analog input	Positive input of amplifier for hall sensor signal
76	SINPHI	Analog output	Amplifier output for hall sensor signal
71	HALLCOS	Analog input	Negative input of amplifier for hall sensor signal
72	REFCOS	Analog input	Positive input of amplifier for hall sensor signal
70	COSPHI	Analog output	Amplifier output for hall sensor signal
FOR MONITOR ONLY			
81	MON	Analog output	
80	MOP	Analog output	
66	VCON	Analog output	
77	SWO	Analog output	Output from mux of SW1 & SW2
78	SW2	Analog input	External input for servo input select
79	SW1	Analog input	External input for servo input select
FOR SERIAL I/O			
42	IO0		
43	IO1		
44	IO2		
45	IO3		
46	IO4		
47	IO5		

4.5 Technical data for CS4334

1. Features

- Complete Stereo DAC System: Interpolation, D/A, Output Analog Filtering
- 24-Bit Conversion
- 96 dB Dynamic Range
- -88 dB THD+N
- Low Clock Jitter Sensitivity
- Single +5 V Power Supply
- Filtered Line Level Outputs
- On-Chip Digital De-emphasis
- Popguard™ Technology
- Functionally Compatible with CS4330/31/33

2. Description

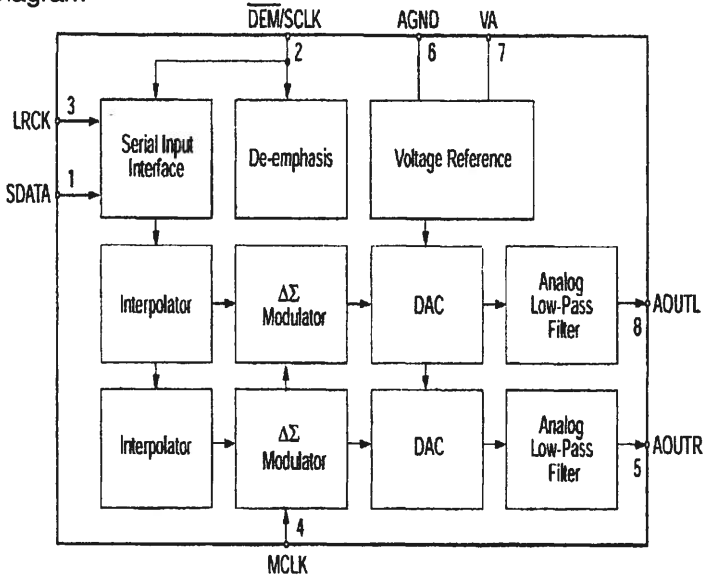
The CS4334 family members are complete, stereo digital-to-analog output systems including interpolation, 1-bit D/A conversion and output analog filtering in an 8-pin package. The CS4334/5/6/7/8/9 support all major audio data interface formats, and the individual devices differ only in the supported interface format.

The CS4334 family is based on delta-sigma modulation, where the modulator output controls the reference voltage input to an ultra-linear analog low-pass filter. This architecture allows for infinite adjustment of sample rate between 2 kHz and 100 kHz simply by changing the master clock frequency.

The CS4334 family contains on-chip digital de-emphasis, operates from a single +5V power supply, and requires minimal support circuitry. These features are ideal for set-top boxes, DVD players, SVCD players, and A/V receivers.

Package: 8–pin
Plastic Solc.

3. Block Diagram



4.6 Technical data for CS4955

1.Features

- Six DACs providing simultaneous composite, S-video, and RGB or Component YUV outputs
- Programmable DAC output currents for low imped-ance (37.5 Ω) and high impedance (150 Ω) loads.
- Multi-standard support for NTSC-M, NTSC-JAPAN, PAL (B, D, G, H, I, M, N, Combination N)
- ITU R.BT656 input mode supporting EAV/SAV codes and CCIR601 Master/Slave input modes
- Programmable HSYNC and VSYNC timing
- Multistandard Teletext (Europe, NABTS, WST) support
- VBI encoding support
- Wide-Screen Signaling (WSS) support, EIA-J CPX1204
- NTSC closed caption encoder with interrupt
- CS4955 supports Macrovision copy protection Version 7
- Host interface configurable for parallel or I^2C compatible operation
- On-chip voltage reference generator
- +3.3 V or +5 V operation, CMOS, low-power modes, tri-state DACs

2.Description

The CS4954/5 provides full conversion from digital video formats YCbCr or YUV into NTSC and PAL Composite, Y/C (S-video) and RGB, or YUV analog video. Input formats can be 27 MHz 8-bit YUV, 8-bit YCbCr, or ITU R.BT656 with support for EAV/SAV codes. Video output can be formatted to be compatible with NTSC-M, NTSC-J, PAL-B,D,G,H,I,M,N, and Combination N systems. Closed Caption is supported in NTSC. Teletext is supported for NTSC and PAL.

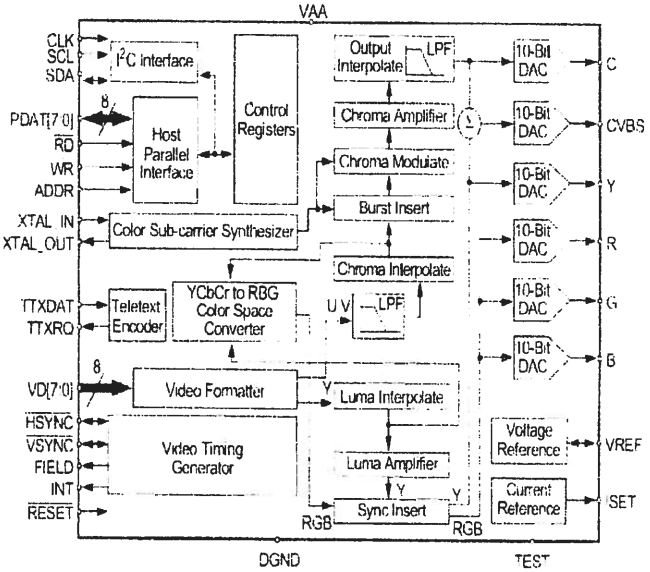
Six 10-bit DACs provide two channels for an S-Video output port, one or two composite video outputs, and three RGB or YUV outputs. Two-times oversampling reduces the output filter requirements and guarantees no DAC-related modulation components within the specified bandwidth of any of the supported video standards.

Parallel or high-speed I^2C compatible control interfaces are provided for flexibility in system design. The parallel interface doubles as a general purpose I/O port when the CS4954/5 is in I^2C mode to help conserve valuable board area.

package:

CS4954CQ/CS4955CQ 48–Pin TQFP

3.Block Diagram



4.7 Technical data for BA5954

4 Channel Driver BA5954FM

1. Functions

- BA5954FM is a 4 channel driver for optical disc motor driver. Dual channel current feedback type drivers are built in, in addition to dual channel motor drivers.
- Wide dynamic range (4.0V (typ.) at PreVcc=12V, PVcc=5V, RL=8 Ω)
- Separating Vcc into Pre+Power of sled motor, Power of loading motor and Power of actuator, can make better power efficiency, by low supply voltage drive.
- Level shift circuit built in.
- Thermal-shut-down circuit built in.
- Stand-by mode built in.

<Actuator driver>

Current phase lag influenced load inductance is little, because this type is current feedback.

< Sled motor driver >

Input pins consist of (+) and (-), therefore various input types are available such as differential input.

<Loading driver >

This is a single input linear BTL driver.

2. Block Diagram

3. Pin Description

No.	Symbol	Function	No.	Symbol	Function
1	VINFC	Input for focus driver	15	VOTK+	Non inverted output of tracking
2	CFCerr1	Connection with capacitor for error amplifier	16	VOTK-	Inverted output of tracking
3	CFCerr2		17	VOLD+	Non inverted output of loading
4	VINSL+	Non inverting input for Op-amp	18	VOLD-	Inverted output of loading
5	VINSL-	Inverting input for OP-amp	19	PGND	GND for power block
6	VOSL	Output of OP-amp	20	VNFTK	Feedback for tracking driver
7	VNFFC	Feedback for focus driver	21	PVcc2	Vcc for power block of actuator
8	Vcc	Vcc for pre-drive block and power block of sled	22	PreGND	GND for pre-drive block
9	PVcc1	Vcc for power block of loading	23	VINLD	Input for loading driver
10	PGND	GND for power block	24	CTKerr2	Connection with capacitor for error amplifier
11	VOSL-	Inverted output of sled	25	CTKerr1	
12	VOSL+	Non inverted output of sled	26	VINTK	Input for tracking driver
13	VOFC-	Inverted output of focus	27	BIAS	Input for reference voltage
14	VOFC+	Non inverted output of focus	28	STBY	Input for stand-by control

Notes: Symbol of + and – (output of drivers) means polarity to input pin.
(For example if voltage of pin 1 is high, pin14 is high.)

1 . FUNCTIONS

- BA5954FM is a 4 channel driver for optical disc motor driver. Dual channel current feedback type drivers are built in, in addition to dual channel motor drivers.
- Wide dynamic range. (4.0V (typ.) at PreVcc=12V,PVcc=5V,RL=8 Ω)
- Separating Vcc into Pre+Power of sled motor, Power of loading motor and Power of actuator, can make better power efficiency, by low supply voltage drive.
- Level shift circuit built in.
- Thermal-shut-down circuit built in.
- Stand-by mode built in.

<Actuator driver>
Current phase lag influenced load inductance is little, because this type is current feedback.

<Sled motor driver>
Input pins consist of (+) and (−), therefore various input types are available such as differential input.

<Loading driver>
This is a single input linear BTL driver.

4. PACKAGE OUTLINES (mm)

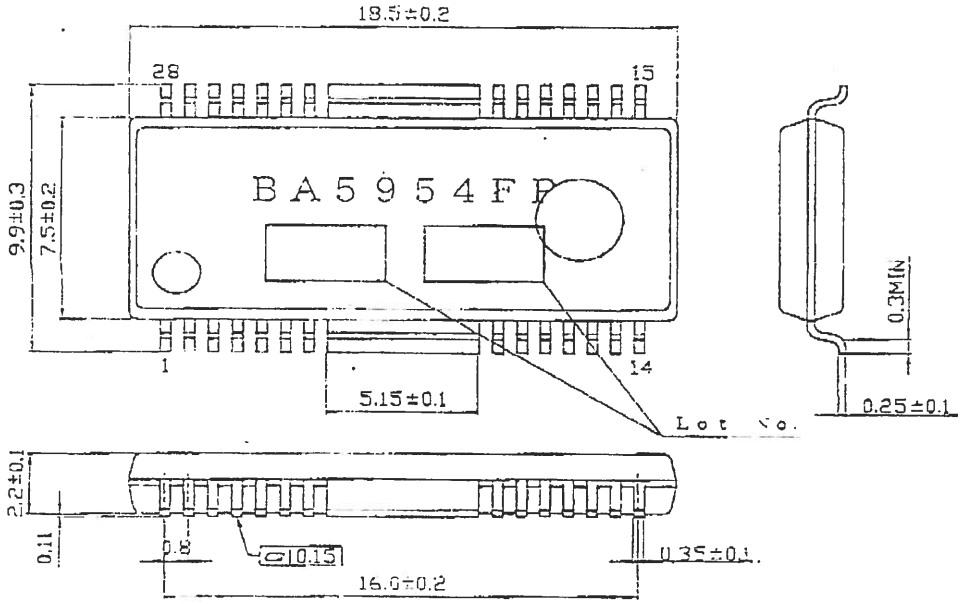


Figure 1

(UNIT : mm)

2. BLOCK DIAGRAM

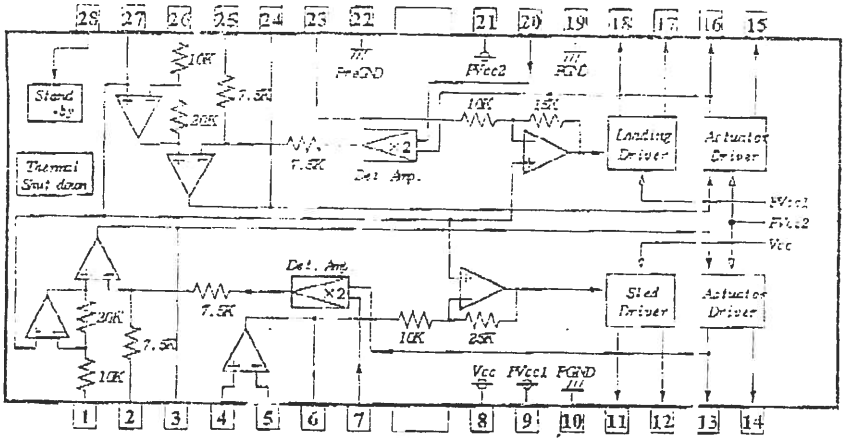


Figure 3

3. Pin description

No	Symbol	Function	No	Symbol	Function
1	VNFC	Input for focus driver	15	VOTK+	Non inverted output of tracking
2	CFCerr1	Connection with capacitor for error amplifier	16	VOTK−	Inverted output of tracking
3	CFCerr2		17	VOLD+	Non inverted output of loading
4	VINSL+	Non inverting Input for OP−amp	18	VOLD−	Inverted output of loading
5	VINSL−	Inverting input for OP−amp	19	PGND	GND for power block
6	VOSL	Output of OP−amp	20	VNFTK	Feedback for tracking driver
7	VNFFC	Feedback for focus driver	21	PVcc2	Vcc for power block of actuator
8	Vcc	Vcc for pre−drive block and power block of sled	22	PreGND	GND for pre−drive block
9	PVcc1	Vcc for power block of loading	23	VINLD	Input for loading driver
10	PGND	GND for power block	24	CTKerr2	Connection with capacitor for error amplifier
11	VOSL−	Inverted output of sled	25	CTKerr1	
12	VOSL+	Non inverted output of sled	26	VINTK	Input for tracking driver
13	VOFC−	Inverted output of focus	27	BIAS	Input for reference voltage
14	VOFC+	Non inverted output of focus	28	STBY	Input for standby control

notes) Symbol of + and − (output of drivers) means polarity to input pin.
(For example if voltage of pin1 is high,pin14 is high.)

4.8 Technical data for NJM4558M

1. GENERAL DESCRIPTION

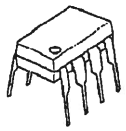
The NJM4558/4559 integrated circuit are a dual high-gain operational amplifier internally compensated and constructed on a single silicon chip using an advanced epitaxial process.

Combining the features of the NJM741 with the close parameter matching and tracking of a dual device on a monolithic chip results in unique performance characteristics. Excellent channel separation allow the use of the dual device in single NJM741 operational amplifier applications providing density. It is especially well suited for applications in differential-in, differential-out as well as in potentiometric amplifiers and where gain and phase matched channels are mandatory.

2. FEATURES

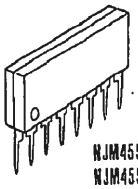
- Operating Voltage (±4V~±18V)
- High Voltage Gain (100dB typ.)
- High Input Resistance (5MΩ typ.)
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

5. PACKAGE OUTLINE

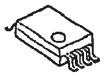


NJM4558D
NJM4559D

NJM4558M
NJM4559M

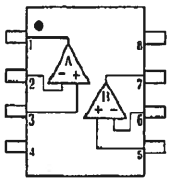


NJM4558L
NJM4559L

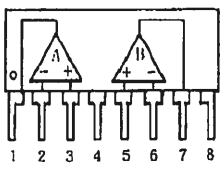


NJM4558V
NJM4559V

3. PIN CONFIGURATION



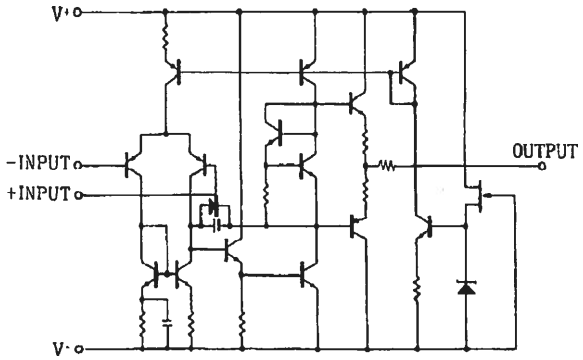
NJM4558D, NJM4558M, NJM4558V
NJM4559D, NJM4559M, NJM4559V



NJM4558L
NJM4559L

PIN FUNCTION
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

4. EQUIVALENT CIRCUIT (1/2 Shown)



4.9 Technical data for NJM4580

1. GENERAL DESCRIPTION

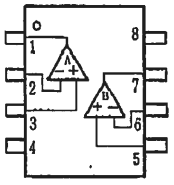
NJM4580 is the dual operational amplifier, specially designed for improving the tone control, which is most suitable for the audio application.

Featuring noiseless, higher gain bandwidth, high output current and low distortion ratio, and it is most suitable not only for acoustic electronic parts of audio pre-amp and active filter, but also for the industrial measurement tools. It is also suitable for the head phone amp at higher output current, and further more, it can be applied for the handy type set operational amplifier of genenal purpose in application of low voltage single supply type which is properly biased of the input low voltage source.

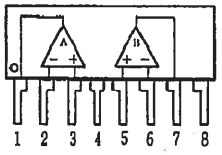
2. FEATURES

• Operating Voltage	(±2V~±18V)
• Low Input Noise Voltage	(0.8 μVrms typ.)
• Wide Gain Bandwidth Product	(15MHz typ.)
• Low Distortion	(0.0005% typ.)
• Slew Rate	(5V/ μs typ.)
• Package Outline	DIP8, SIP8, EMP8, SSOP8, DMP8
• Bipolar Technology	

3. PIN CONFIGURATION



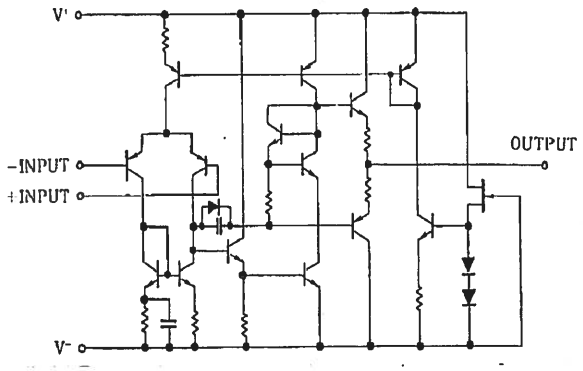
NJM4580D, NJM4580E
NJM4580M, NJM4580V



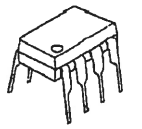
NJM4580L

PIN FUNCTION
1. A OUTPUT
2. A −INPUT
3. A +INPUT
4. V⁻
5. B +INPUT
6. B −INPUT
7. B OUTPUT
8. V⁺

4. EQUIVALENT CIRCUIT (1/2 Shown)



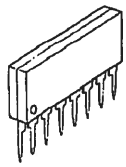
5. PACKAGE OUTLINE



NJM4580D

NJM4580M

NJM4580E



NJM4580L

NJM4580V

4.10 Technical data for 24C01

1. FEATURES

- Single supply with 5.0V operation
- Low power CMOS technology
  - 1 mA active current typical
  - 10 µA standby current typical at 5.0V
  - 5 µA standby current typical at 5.0V
- Organized as a single block of 128 bytes (128 x 8) or 256 bytes (256 x 8)
- 2-wire serial interface bus, I²C compatible
- 100 kHz compatibility
- Self-timed write cycle (including auto-erase)
- Page-write buffer for up to 8 bytes
- 2 ms typical write cycle time for page-write
- Hardware write protect for entire memory
- Can be operated as a serial ROM
- ESD protection > 3,000V
- 1,000,000 ERASE/WRITE cycles guaranteed
  Data retention > 200 years
- 8 pin DIP or SOIC package
- Available for extended temperature ranges
  - Automotive (E): -40°C to +125°C

2. DESCRIPTION

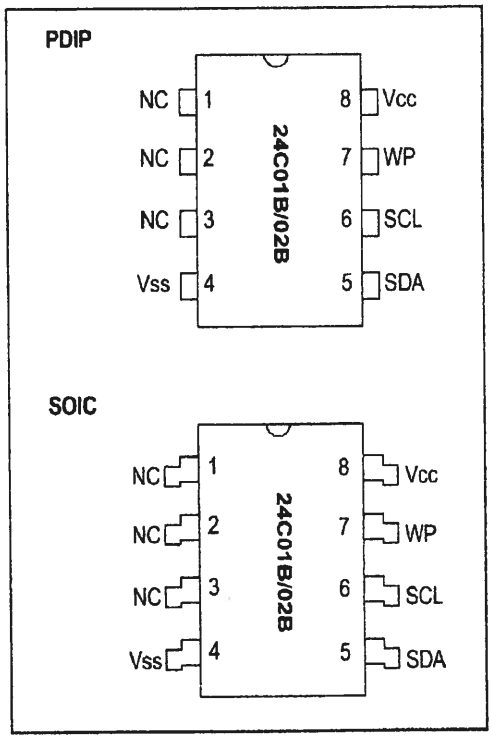
The Microchip Technology Inc. 24C01B and 24C02B are 1K bit and 2K bit Electrically Erasable PROMs. The devices are organized as a single block of 128 x 8 bit or 256 x 8 bit memory with a 2-wire serial interface. The 24C01B and 24C02B also have page-write capability for up to 8 bytes of data. The 24C01B and 24C02B are available in the standard 8-pin DIP and an 8-pin surface mount SOIC package.

These devices are for extended temperature applications only. It is recommended that all other applications use Microchip's 24LC01B/02B.

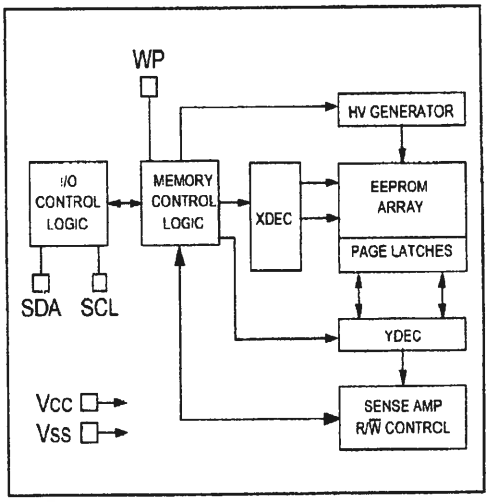
TABLE 1-1: PIN FUNCTION TABLE

Name	Function
Vss	Ground
SDA	Serial Address/Data I/O
SCL	Serial Clock
WP	Write Protect Input
Vcc	+5.0V Power Supply
NC	No Internal Connection

3. PACKAGE TYPES



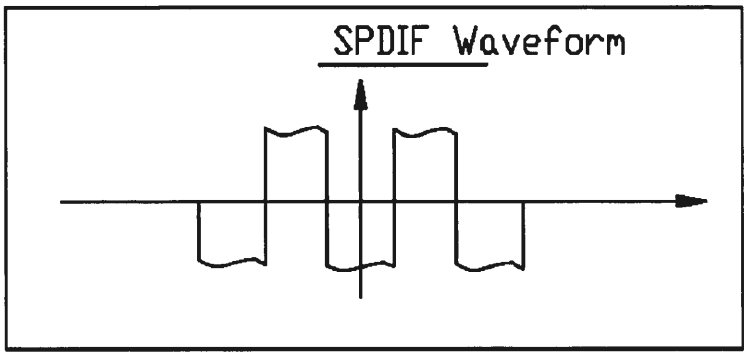
4. BLOCK DIAGRAM



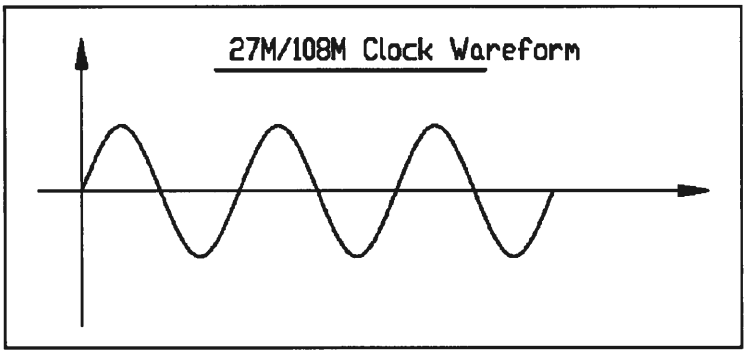
5. Service Data of Key ICs (for DVD127)

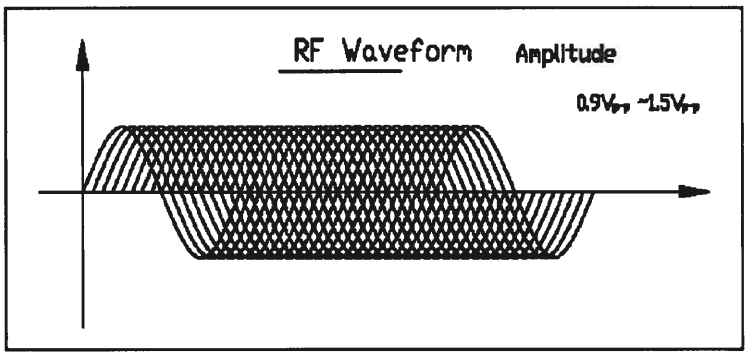
Position	Pin No.	Digital Multimeter	
		Operating Voltage（V）	Ground Resistance （Ω）
N3 (1M FLASH)	22	0	
	24	Non-cyclical pulse	
N4 (M5705)	4, 14, 26, 165	5	
	55, 58, 76, 115	3.3	
	59, 60	1.6	
	2	0．9~1.5V_{P-P}	
N5 (4558)	1, 2, 3	2．1	
N6 (SP3721A)	3, 4, 18	2．1	
	26	2．5	
	28, 32	5	
	55		8．1K
N7 (BA5954FP)	8	10．6	
	11∽18	2.5	
	9, 21	5	
D1 (ES6008)	1, 18, 27, 51, 59, 68, 75, 92, 99, 104, 111, 130, 148, 157, 164, 183, 193, 201	3．3	
	9, 35, 44, 83, 121, 139, 172	2．8	
	108, 113, 114		75
D2 (8M FLASH)	12	0	
	14	Non-cyclical pulse	

6. Waveforms of Key Points (for DVD127)



NOTE:Waveform of address bus and data bus in all the DRAMs and FLASHs belong to noncyclic pulse wave.





7. Service Data of Key ICs (for DVD128/129)

Position	Pin No.	Digital Multimeter	
		Operating Voltage(V)	Ground Resistance (Ω)
U1(MT1336E)	7	RF signal 0.9-1.5V_{P-P}	
	2, 5, 14, 64, 67, 69, 109, 114, 120	5	
U3 (MT1369AE)	16, 41, 70, 82, 111, 121, 141, 169	2. 5	
	11, 34, 53, 64, 92, 102, 131, 151, 156, 178, 185, 186, 202	3. 3	
U7 (8M FLASH)	12	0	
	14	Non-cyclical pulse	
U21 (BA5954)	8	10. 6	
	9, 21	5	
	11, 12, 13, 14, 15, 16, 17, 18	2. 5	

9. Replacement of Parts

9.1 Description

Many electrical and mechanical components in this chassis have special safety–related characteristics. Components which have these special safety characteristics in this manual and its supplements are identified by the international hazard symbols or UL, FCC, FDA , VDE or CB listing marking on the circuit diagram and parts list. When replacing any of these components, substitute the one which has the same safety characteristics as specified in the manual.

9.2 Replacement Table of Parts

PARTS LIST

Position	Parts	Type
		1.Parts on Main PCB
R309	Carbon film resistor	RT13-0.166W-1ΩJ
R519	Carbon film resistor	RT13-0.166W-22ΩJ
R207	Carbon film resistor	RT13-0.166W-56ΩJ
R108	Carbon film resistor	RT13-0.166W-68ΩJ
RV32	Carbon film resistor	RT13-0.166W-75ΩJ
RV01	Carbon film resistor	RT13-0.166W-82ΩJ
RV03	Carbon film resistor	RT13-0.166W-82ΩJ
RV05	Carbon film resistor	RT13-0.166W-82ΩJ
RV11	Carbon film resistor	RT13-0.166W-82ΩJ
RV17	Carbon film resistor	RT13-0.166W-82ΩJ
R292	Carbon film resistor	RT13-0.166W-100ΩJ
R707	Carbon film resistor	RT13-0.166W-100ΩJ
R743	Carbon film resistor	RT13-0.166W-100ΩJ
R744	Carbon film resistor	RT13-0.166W-100ΩJ
R800	Carbon film resistor	RT13-0.166W-100ΩJ
RS05	Carbon film resistor	RT13-0.166W-100ΩJ
RS06	Carbon film resistor	RT13-0.166W-100ΩJ
RV02	Carbon film resistor	RT13-0.166W-100ΩJ
RV04	Carbon film resistor	RT13-0.166W-100ΩJ
RV06	Carbon film resistor	RT13-0.166W-100ΩJ
RV08	Carbon film resistor	RT13-0.166W-100ΩJ
RV10	Carbon film resistor	RT13-0.166W-100ΩJ
RV12	Carbon film resistor	RT13-0.166W-100ΩJ
RV14	Carbon film resistor	RT13-0.166W-100ΩJ
RV16	Carbon film resistor	RT13-0.166W-100ΩJ
RV18	Carbon film resistor	RT13-0.166W-100ΩJ
RV23	Carbon film resistor	RT13-0.166W-100ΩJ
RV24	Carbon film resistor	RT13-0.166W-100ΩJ
RV25	Carbon film resistor	RT13-0.166W-100ΩJ
RV26	Carbon film resistor	RT13-0.166W-100ΩJ
RV28	Carbon film resistor	RT13-0.166W-100ΩJ
RV39	Carbon film resistor	RT13-0.166W-100ΩJ
RV40	Carbon film resistor	RT13-0.166W-100ΩJ
RV41	Carbon film resistor	RT13-0.166W-100ΩJ
R101	Carbon film resistor	RT13-0.166W-120ΩJ
R209	Carbon film resistor	RT13-0.166W-120ΩJ
R219	Carbon film resistor	RT13-0.166W-150ΩJ
RV21	Carbon film resistor	RT13-0.166W-150ΩJ
R104	Carbon film resistor	RT13-0.166W-180ΩJ
RV31	Carbon film resistor	RT13-0.166W-180ΩJ
R122	Carbon film resistor	RT13-0.166W-220ΩJ
R123	Carbon film resistor	RT13-0.166W-220ΩJ

PARTS LIST (continued)

Position	Parts	Type
R222	Carbon film resistor	RT13-0.166W-220ΩJ
R224	Carbon film resistor	RT13-0.166W-220ΩJ
R732	Carbon film resistor	RT13-0.166W-220ΩJ
R730	Carbon film resistor	RT13-0.166W-270ΩJ
R741	Carbon film resistor	RT13-0.166W-470ΩJ
R742	Carbon film resistor	RT13-0.166W-470ΩJ
R184	Carbon film resistor	RT13-0.166W-560ΩJ
R120	Carbon film resistor	RT13-0.166W-680ΩJ
R405	Carbon film resistor	RT13-0.166W-680ΩJ
R746	Carbon film resistor	RT13-0.166W-680ΩJ
R747	Carbon film resistor	RT13-0.166W-680ΩJ
R748	Carbon film resistor	RT13-0.166W-680ΩJ
RV20	Carbon film resistor	RT13-0.166W-680ΩJ
RV22	Carbon film resistor	RT13-0.166W-820ΩJ
R142	Carbon film resistor	RT13-0.166W-1KΩJ
R186	Carbon film resistor	RT13-0.166W-1KΩJ
R193	Carbon film resistor	RT13-0.166W-1KΩJ
R217	Carbon film resistor	RT13-0.166W-1KΩJ
R282	Carbon film resistor	RT13-0.166W-1KΩJ
R291	Carbon film resistor	RT13-0.166W-1KΩJ
R401	Carbon film resistor	RT13-0.166W-1KΩJ
R416	Carbon film resistor	RT13-0.166W-1KΩJ
R517	Carbon film resistor	RT13-0.166W-1KΩJ
RV19A	Carbon film resistor	RT13-0.166W-1KΩJ
R106	Carbon film resistor	RT13-0.166W-1.2KΩJ
R107	Carbon film resistor	RT13-0.166W-1.2KΩJ
RV19	Carbon film resistor	RT13-0.166W-1.2KΩJ
R523	Carbon film resistor	RT13-0.166W-1.5KΩJ
R721	Carbon film resistor	RT13-0.166W-1.5KΩJ
R797	Carbon film resistor	RT13-0.166W-1.5KΩJ
R799	Carbon film resistor	RT13-0.166W-1.5KΩJ
R130	Carbon film resistor	RT13-0.166W-1.8KΩJ
R424	Carbon film resistor	RT13-0.166W-1.8KΩJ
R215	Carbon film resistor	RT13-0.166W-2.2KΩJ
R301A	Carbon film resistor	RT13-0.166W-2.2KΩJ
R307	Carbon film resistor	RT13-0.166W-2.2KΩJ
R402	Carbon film resistor	RT13-0.166W-2.2KΩJ
R728	Carbon film resistor	RT13-0.166W-2.2KΩJ
R798	Carbon film resistor	RT13-0.166W-2.2KΩJ
R809	Carbon film resistor	RT13-0.166W-2.2KΩJ
RV35	Carbon film resistor	RT13-0.166W-2.2KΩJ
RV38	Carbon film resistor	RT13-0.166W-2.2KΩJ
R301B	Carbon film resistor	RT13-0.166W-2.4KΩJ

PARTS LIST (continued)

Position	Parts	Type
R228	Carbon film resistor	RT13-0.166W-2.7KΩJ
R526	Carbon film resistor	RT13-0.166W-2.7KΩJ
R191	Carbon film resistor	RT13-0.166W-3.3KΩJ
R192	Carbon film resistor	RT13-0.166W-3.3KΩJ
R211	Carbon film resistor	RT13-0.166W-3.3KΩJ
R736	Carbon film resistor	RT13-0.166W-3.3KΩJ
R737	Carbon film resistor	RT13-0.166W-3.3KΩJ
R738	Carbon film resistor	RT13-0.166W-3.3KΩJ
R739	Carbon film resistor	RT13-0.166W-3.3KΩJ
R739A	Carbon film resistor	RT13-0.166W-3.3KΩJ
R749	Carbon film resistor	RT13-0.166W-3.3KΩJ
R572	Carbon film resistor	RT13-0.166W-3.9KΩJ ⚠FDA
R105	Carbon film resistor	RT13-0.166W-4.7KΩJ
R302	Carbon film resistor	RT13-0.166W-4.7KΩJ
R424	Carbon film resistor	RT13-0.166W-4.7KΩJ
R553	Carbon film resistor	RT13-0.166W-4.7KΩJ
R727	Carbon film resistor	RT13-0.166W-4.7KΩJ
R755	Carbon film resistor	RT13-0.166W-4.7KΩJ
R757	Carbon film resistor	RT13-0.166W-4.7KΩJ
R778	Carbon film resistor	RT13-0.166W-4.7KΩJ
R511	Carbon film resistor	RT13-0.166W-5.6KΩJ
R183	Carbon film resistor	RT13-0.166W-8.2KΩJ
R724	Carbon film resistor	RT13-0.166W-8.2KΩJ
R894A	Carbon film resistor	RT13-0.166W-8.2KΩJ
R896A	Carbon film resistor	RT13-0.166W-8.2KΩJ
R194	Carbon film resistor	RT13-0.166W-10KΩJ
R235B	Carbon film resistor	RT13-0.166W-10KΩJ
R280	Carbon film resistor	RT13-0.166W-10KΩJ
R281	Carbon film resistor	RT13-0.166W-10KΩJ
R293	Carbon film resistor	RT13-0.166W-10KΩJ
R573	Carbon film resistor	RT13-0.166W-10KΩJ
R586	Carbon film resistor	RT13-0.166W-10KΩJ
R710	Carbon film resistor	RT13-0.166W-10KΩJ
R726	Carbon film resistor	RT13-0.166W-10KΩJ
R729	Carbon film resistor	RT13-0.166W-10KΩJ
R733	Carbon film resistor	RT13-0.166W-10KΩJ
R734	Carbon film resistor	RT13-0.166W-10KΩJ
R773	Carbon film resistor	RT13-0.166W-10KΩJ
R774	Carbon film resistor	RT13-0.166W-10KΩJ
R775	Carbon film resistor	RT13-0.166W-10KΩJ
RV27	Carbon film resistor	RT13-0.166W-10KΩJ
R201	Carbon film resistor	RT13-0.166W-12KΩJ
R305	Carbon film resistor	RT13-0.166W-12KΩJ

PARTS LIST (continued)

Position	Parts	Type
R313	Carbon film resistor	RT13-0.166W-12KΩJ
R233	Carbon film resistor	RT13-0.166W-15KΩJ
R235	Carbon film resistor	RT13-0.166W-15KΩJ
R415	Carbon film resistor	RT13-0.166W-15KΩJ
R522	Carbon film resistor	RT13-0.166W-15KΩJ
R515	Carbon film resistor	RT13-0.166W-22KΩJ
R556	Carbon film resistor	RT13-0.166W-22KΩJ
RV29	Carbon film resistor	RT13-0.166W-22KΩJ
R131	Carbon film resistor	RT13-0.166W-33KΩJ
R185	Carbon film resistor	RT13-0.166W-47KΩJ
R203	Carbon film resistor	RT13-0.166W-47KΩJ
R205	Carbon film resistor	RT13-0.166W-47KΩJ
R426	Carbon film resistor	RT13-0.166W-47KΩJ
R585	Carbon film resistor	RT13-0.166W-47KΩJ
RV30	Carbon film resistor	RT13-0.166W-47KΩJ
RV33	Carbon film resistor	RT13-0.166W-47KΩJ
RV34	Carbon film resistor	RT13-0.166W-47KΩJ
RV36	Carbon film resistor	RT13-0.166W-47KΩJ
RV37	Carbon film resistor	RT13-0.166W-47KΩJ
R314	Carbon film resistor	RT13-0.166W-51KΩJ
R561	Carbon film resistor	RT13-0.166W-51KΩJ
R562	Carbon film resistor	RT13-0.166W-51KΩJ
R132	Carbon film resistor	RT13-0.166W-100KΩJ
R225	Carbon film resistor	RT13-0.166W-100KΩJ
R723	Carbon film resistor	RT13-0.166W-100KΩJ
RV07	Carbon film resistor	RT13-0.166W-100KΩJ
RV09	Carbon film resistor	RT13-0.166W-100KΩJ
RV13	Carbon film resistor	RT13-0.166W-100KΩJ
RV15	Carbon film resistor	RT13-0.166W-100KΩJ
R182	Carbon film resistor	RT13-0.166W-150KΩJ
R554	Carbon film resistor	RT13-0.166W-150KΩJ
R220	Carbon film resistor	RT13-0.166W-220KΩJ
R440	Carbon film resistor	RT13-0.166W-220KΩJ
R722	Carbon film resistor	RT13-0.166W-220KΩJ
R701	Carbon film resistor	RT13-0.166W-390KΩJ
R725	Carbon film resistor	RT13-0.166W-1MΩJ
R583	Carbon film resistor	RT14-0.25W-1.8KΩJ
R304	Carbon film resistor	RT15-0.5W-1ΩJ
R323A	Carbon film resistor	RT15-0.5W-1KΩJ
R403	Carbon film resistor	RT15-0.5W-1KΩJ
R245	Metal film resistor	RJ14-0.25W-4.7KΩF
R310	Metal oxide film resistor	RY21-0.5W-220ΩJ
R443A	Metal oxide film resistor	RY21-0.5W-15KΩJ

PARTS LIST (continued)

Position	Parts	Type
R555	Metal oxide film resistor	RY21-0.5W-47KΩJ
R323	Metal oxide film resistor	RY21-1W-220ΩJ
R443	Metal oxide film resistor	RY21-1W-1KΩJ
R446	Metal oxide film resistor	RY21-2W-2.2KΩJ
R581	Metal oxide film resistor	RY21-2W-2.2KΩJ
R581A	Metal oxide film resistor	RY21-2W-2.2KΩJ
R537	Metal oxide film resistor	RY21-2W-27ΩJ
R525	Metal oxide film resistor	RY21-2W-68ΩJ
R404	Metal oxide film resistor	RY21-2W-330ΩJ ⚠FDA
R141	Metal oxide film resistor	RY21-2W-15KΩJ
R551	Metal oxide film resistor	RY21-2W-15KΩJ
R552	Metal oxide film resistor	RY21-2W-15KΩJ
R568	Metal oxide film resistor	RY21-2W-22KΩJ
R571	Metal oxide film resistor	RY21-2W-39KΩJ
R565	Metal oxide film resistor	RY21-3W-2.4ΩJ
R565A	Metal oxide film resistor	RY21-3W-2.4ΩJ
R525A	Metal oxide film resistor	RY21-3W-33KΩJ
R520	Solid resistor	RS11-0.5W-120KΩK
R520	Glass glazed resistor	RI40-0.5W-120KΩK
R521	Solid resistor	RS11-0.5W-120KΩK
R521	Glass glazed resistor	RI40-0.5W-120KΩK
R524	Glass glazed potentiometer	RXG4-6W-15ΩJ
R435	Glass glazed potentiometer	RXG4-6W-8.2ΩK
R502	Glass glazed potentiometer	RXG6-H3-10W-2.2ΩJ
RF569	Fuse resistor	RF10-2W-1ΩJ
RF569	Fuse resistor	RF11-2W-1ΩJ
RF481	Fuse resistor	RF11-2W-2.7ΩJ
RM04A	Glass glazed resistor	VR68-2M7J/232224413275 ⚠FDA
RM04A	Glass glazed resistor	RI81-1W-2.7MΩJ ⚠FDA
RP551	Glass glazed potentiometer	WI06-2Y-0.125W-2KΩ-A ⚠FDA
RT501A	Thermistor	BC96709-7Ω/232266296709 ⚠FDA
C710	Ceramic capacitor	CC1-63V-06a-C-15PFJ
C238	Ceramic capacitor	CC1-63V-06a-C-18PFJ
C553A	Ceramic capacitor	CC1-63V-06a-C-18PFJ
C709	Ceramic capacitor	CC1-63V-06a-C-18PFJ
C240	Ceramic capacitor	CC1-63V-06a-C-39PFJ
C239	Ceramic capacitor	CT1-63V-06a-2B4-470PFK
C108	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C182	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C234	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C301	Ceramic capacitor	CT1-63V-06a-2B4-1000PFK
C109	Ceramic capacitor	CT1-63V-06a-2B4-1500PFK
C110	Ceramic capacitor	CT1-63V-06a-2B4-1500PFK

PARTS LIST (continued)

Position	Parts	Type
C111	Ceramic capacitor	CT1-63V-06a-2B4-1500PFK
C416	Ceramic capacitor	CT1-63V-10a-2B4-3900PFK
C191	Ceramic capacitor	CT1-63V-10a-2B4-4700PFK
C193	Ceramic capacitor	CT1-63V-10a-2B4-4700PFK
C144	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C198	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C201	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C202	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C203	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C205	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C206	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C210	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C218	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C235	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C249	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C251	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C255	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C513	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C703	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C712	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C713	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C799	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
CV10	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
CV11	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
CV20	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
C309	Ceramic capacitor	CC1-500V-06c-SL-18PFJ
C415	Ceramic capacitor	CT1-500V-06c-2B4-390PFK
C401	Ceramic capacitor	CT1-500V-10c-2B4-1000PFK
C402	Ceramic capacitor	CT1-500V-14c-2B4-3900PFK
C554	Ceramic capacitor	CT81-1KV-08c-2B4-470PFK
C503	Ceramic capacitor	CT81-1KV-10c-2B4-1000PFM
C504	Ceramic capacitor	CT81-1KV-10c-2B4-1000PFM
C505	Ceramic capacitor	CT81-1KV-10c-2B4-1000PFM
C506	Ceramic capacitor	CT81-1KV-10c-2B4-1000PFM
C518	Ceramic capacitor	CT81-1KV-10c-2B4-1000PFM
C552A	Ceramic capacitor	CT81-2KV-08c-2B4-220PFK
C551	Ceramic capacitor	CT81-2KV-10c-2B4-470PFK
C436	Ceramic capacitor	CT81-2KV-12c-2B4-680PFK ⚠FDA
C516	Ceramic capacitor	CT81-2KV-12c-2B4-680PFK ⚠FDA
CR531	Ceramic capacitor	CT81-250VAC-12c-2B4-470PFK ⚠FDA
CR532	Ceramic capacitor	CT81-250VAC-12c-2B4-470PFK ⚠FDA
C534	Ceramic capacitor	CT81-250VAC-12c-2E4-2200PFM ⚠FDA
C216	Aluminum electrolytic capacitor	CD110X-16V-47μFM

PARTS LIST (continued)

Position	Parts	Type
C777	Aluminum electrolytic capacitor	CD110X-16V-47μFM
CV19	Aluminum electrolytic capacitor	CD110X-16V-47μFM
C195	Aluminum electrolytic capacitor	CD110X-16V-100μFM
C212	Aluminum electrolytic capacitor	CD110X-16V-100μFM
CV23	Aluminum electrolytic capacitor	CD110X-16V-220μFM
C122	Aluminum electrolytic capacitor	CD110X-16V-470μFM
C250	Aluminum electrolytic capacitor	CD110X-16V-470μFM
C500	Aluminum electrolytic capacitor	CD110X-16V-470μFM
C538	Aluminum electrolytic capacitor	CD110X-16V-470μFM
C574	Aluminum electrolytic capacitor	CD110X-16V-470μFM
C564	Aluminum electrolytic capacitor	CD110X-16V-1000μFM
C564	Aluminum electrolytic capacitor	CD110X-16V-2200μFM
C303	Aluminum electrolytic capacitor	CD110X-25V-470μFM
C199	Aluminum electrolytic capacitor	CD110X-25V-1000μFM
C306	Aluminum electrolytic capacitor	CD110X-25V-1000μFM
C565	Aluminum electrolytic capacitor	CD110X-25V-2200μFM
C565	Aluminum electrolytic capacitor	CD110X-25V-2200μFM
C403	Aluminum electrolytic capacitor	CD110X-35V-47μFM
C302	Aluminum electrolytic capacitor	CD110X-35V-100μFM
C563	Aluminum electrolytic capacitor	CD110X-35V-1000μFM
C242	Aluminum electrolytic capacitor	CD110-50V-0.47μFM
C244	Aluminum electrolytic capacitor	CD110-50V-0.47μFM
C256	Aluminum electrolytic capacitor	CD110-50V-0.47μFM
C711	Aluminum electrolytic capacitor	CD110-50V-0.47μFM
C208	Aluminum electrolytic capacitor	CD110-50V-1μFM
C230	Aluminum electrolytic capacitor	CD110-50V-1μFM
C235B	Aluminum electrolytic capacitor	CD110-50V-1μFM
C236	Aluminum electrolytic capacitor	CD110-50V-1μFM
C236B	Aluminum electrolytic capacitor	CD110-50V-1μFM
C321	Aluminum electrolytic capacitor	CD110-50V-1μFM
C572	Aluminum electrolytic capacitor	CD110-50V-1μFM
C808	Aluminum electrolytic capacitor	CD110-50V-1μFM
CV12	Aluminum electrolytic capacitor	CD110-50V-1μFM
CV13	Aluminum electrolytic capacitor	CD110-50V-1μFM
C131	Aluminum electrolytic capacitor	CD110-50V-2.2μFM
CV17	Aluminum electrolytic capacitor	CD110-50V-2.2μFM
C141	Aluminum electrolytic capacitor	CD110-50V-4.7μFM
C304	Aluminum electrolytic capacitor	CD110-50V-4.7μFM
C181	Aluminum electrolytic capacitor	CD110-50V-10μFM
C246	Aluminum electrolytic capacitor	CD110-50V-10μFM
C701	Aluminum electrolytic capacitor	CD110-50V-10μFM
C705	Aluminum electrolytic capacitor	CD110-50V-10μFM
C733	Aluminum electrolytic capacitor	CD110-50V-10μFM

PARTS LIST (continued)

Position	Parts	Type
C798	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV01	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV02	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV06	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV07	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV08	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV14	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV15	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV16	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV18	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV21	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV22	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV24	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV25	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV26	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV27	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV03	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV04	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV05	Aluminum electrolytic capacitor	CD110-50V-10μFM
CV09	Aluminum electrolytic capacitor	CD110-50V-10μFM
C422	Aluminum electrolytic capacitor	CD71-50V-4.7μFM
C443	Aluminum electrolytic capacitor	CD81-160V-4.7μFM
C443A	Aluminum electrolytic capacitor	CD81-160V-4.7μFM
C561A	Aluminum electrolytic capacitor	CD110X-160V-47μFM
C571	Aluminum electrolytic capacitor	CD110X-160V-47μFM
C561	Aluminum electrolytic capacitor	CD288-160V-220μFM
C507	Aluminum electrolytic capacitor	CD293-200V-270μFM
C204	Polyester film capacitor	CL21X-50V-0.015μFJ
C228	Polyester film capacitor	CL21X-50V-0.015μFJ
C112	Polyester film capacitor	CL21X-50V-0.022μFJ
C515	Polyester film capacitor	CL21X-50V-0.022μFJ
C726	Polyester film capacitor	CL21X-50V-0.022μFJ
C517	Polyester film capacitor	CL21X-50V-0.033μFJ
C229	Polyester film capacitor	CL21X-50V-0.056μFJ
C254	Polyester film capacitor	CL21X-50V-0.056μFJ
C404	Polyester film capacitor	CL21X-50V-0.056μFJ
C214	Polyester film capacitor	CL21X-50V-0.1μFJ
C444	Polyester film capacitor	CL21X-50V-0.1μFJ
C514	Polyester film capacitor	CL21X-50V-0.1μFJ
C192	Polyester film capacitor	CL21X-50V-0.22μFK
C194	Polyester film capacitor	CL21X-50V-0.22μFK
C220	Polyester film capacitor	CL21X-50V-0.22μFK
C222	Polyester film capacitor	CL21X-50V-0.47μFK

PARTS LIST (continued)

Position	Parts	Type
C437	Polyester film capacitor	CL21X-50V-0.47μFK
C308	Polyester film capacitor	CL12-100V-0.033μFK
C307	Polyester film capacitor	CL12-100V-0.1μFK
C442	Polypropylene capacitor	CBB13-400V-0.33μFJ ⚠FDA
C442	Polypropylene capacitor	CBB13-400V-0.33μFJ
C516A	Polypropylene capacitor	CBB13-630V-0.022μFJ ⚠FDA
C501	Polypropylene capacitor	MKP3355-275V-0.1μFM ⚠FDA
C502	Polypropylene capacitor	MKP3355-275V-0.1μFM ⚠FDA
C435	Polypropylene capacitor	CBB81-1.6KV-7200PFJ ⚠FDA
C435	Polypropylene capacitor	CBB81-1.6KV-7200PFJ
L104	Fixed inductor	LGB0606-1μHJ
L202	Fixed inductor	LGB0606-10μHK
L204	Fixed inductor	LGB0606-10μHK
L705	Fixed inductor	LGB0606-10μHK
L287	Fixed inductor	LGB0606-15μHK
LV01	Fixed inductor	LGB0606-22μHK
L431	Feed-through inductor	ZZ008
L441	Horizontal amplitude inductor	TLN0028C(JU4.756.034) ⚠FDA
L406	Horizontal linear inductor	HXT-39
L201	IF transformer	ST6030
L502	Line filter	LCL-F15(JUB4.757.001)
L503	Filtering inductor	LCL-F16(JUB4.757.002)
L551	Fixed inductor	TLN3155D-100μHK
T401	Line drive transformer	BCT-5(JU4.739.031) ⚠FDA
T511	Switch transformer	BCK24202L ⚠FDA
T432	FBT	BSC66G ⚠FDA
DJ798	Relay	JZC-36F-005-HS ⚠FDA
VD704	Diode	W05Z3.6A
VD704	Diode	HZ4C3
VD704	Diode	RD3.6EL
VD533	Diode	W05Z5.6C
VD533	Diode	MTZJ5.6C
VD561	Diode	W05Z6.2C ⚠FDA
VD561	Diode	MTZJ6.2C
VD404	Diode	W05Z7.5C
VD404	Diode	MTZJ7.5C
VD519	Diode	W05Z7.5C
VD519	Diode	MTZJ7.5C
VD572	Diode	W05Z7.5C ⚠FDA
VD572	Diode	MTZJ7.5C
VD587A	Diode	W05Z10B
VD587A	Diode	MTZJ10B
VD586	Diode	W05Z16B

PARTS LIST (continued)

Position	Parts	Type
VD586	Diode	MTZJ16B
VD302	Diode	1Z75
VD191	Diode	1N4148
VD191	Diode	2CK75D
VD208	Diode	1N4148
VD208	Diode	2CK75D
VD209	Diode	1N4148
VD209	Diode	2CK75D
VD261	Diode	1N4148
VD261	Diode	2CK75D
VD262	Diode	1N4148
VD262	Diode	2CK75D
VD263	Diode	1N4148
VD263	Diode	2CK75D
VD403A	Diode	1N4148
VD403A	Diode	2CK75D
VD405	Diode	1N4148
VD405	Diode	2CK75D
VD431	Diode	1N4148
VD431	Diode	2CK75D
VD514	Diode	1N4148
VD514	Diode	2CK75D
VD516	Diode	1N4148
VD516	Diode	2CK75D
VD518	Diode	1N4148
VD518	Diode	2CK75D
VD584	Diode	1N4148
VD584	Diode	2CK75D
VD798	Diode	1N4148
VD798	Diode	2CK75D
VD813A	Diode	1N4148
VD813A	Diode	2CK75D
VD571	Diode	RM11C ⚠FDA
VD441	Diode	RM11C
VD501	Diode	RL205
VD502	Diode	RL205
VD503	Diode	RL205
VD504	Diode	RL205
VD520	Diode	BYV26D
VD520	Diode	BYV26D
VD551	Diode	BYM26D
VD301	Diode	ZEM01Z
VD553	Diode	SR1505

PARTS LIST (continued)

Position	Parts	Type
VD554	Diode	SR1505
VD557	Diode	SR1505
VD517	Diode	2CZES1
VD442	Diode	AU01Z
VD555A	Diode	2CZEU1C
VD555A	Diode	EU1C
VD515	Photo coupler	LTV-816 ⚠FDA
V581	Triode	3DG2688-L
V581	Triode	2SC2688-L
V581	Triode	3DA2688
V191	Triode	3CG1015-Y
V191	Triode	2SA1015-Y
V191	Triode	2PA1015-Y
V511	Triode	3CG1015-Y
V511	Triode	2SA1015-Y
V511	Triode	2PA1015-Y
V702	Triode	3CG1015-Y
V702	Triode	2SA1015-Y
V702	Triode	2PA1015-Y
V181	Triode	3DG1815-Y
V181	Triode	2SC1815-Y
V181	Triode	2PC1815-Y
V231	Triode	3DG1815-Y
V231	Triode	2SC1815-Y
V231	Triode	2PC1815-Y
V232	Triode	3DG1815-Y
V232	Triode	2SC1815-Y
V232	Triode	2PC1815-Y
V553	Triode	3DG1815-Y
V553	Triode	2SC1815-Y
V553	Triode	2PC1815-Y
V585	Triode	3DG1815-Y
V585	Triode	2SC1815-Y
V585	Triode	2PC1815-Y
V586	Triode	3DG1815-Y
V586	Triode	2SC1815-Y
V586	Triode	2PC1815-Y
V703	Triode	3DG1815-Y
V703	Triode	2SC1815-Y
V703	Triode	2PC1815-Y
V704	Triode	3DG1815-Y
V704	Triode	2SC1815-Y
V704	Triode	2PC1815-Y

PARTS LIST (continued)

Position	Parts	Type
VV01	Triode	3DG1815-Y
VV01	Triode	2SC1815-Y
VV01	Triode	2PC1815-Y
VV02	Triode	3DG1815-Y
VV02	Triode	2SC1815-Y
VV02	Triode	2PC1815-Y
VV03	Triode	3DG1815-Y
VV03	Triode	2SC1815-Y
VV03	Triode	2PC1815-Y
VV04	Triode	3DG1815-Y
VV04	Triode	2SC1815-Y
VV04	Triode	2PC1815-Y
VV10	Triode	3DG1815-Y
VV10	Triode	2SC1815-Y
VV10	Triode	2PC1815-Y
V798	Triode	2SC2655-Y
V101	Triode	KSC388C-Y
V431	Triode	3DG2383-O ⚠FDA
V431	Triode	3DG2383-Y
V431	Triode	2SC2383-O
V431	Triode	2SC2383-Y
V431	Triode	KSC2383-O
V431	Triode	KSC2383-Y
V512	Triode	2SC3807
V512	Triode	2SC3807A
V582	Triode	2SD882-P
V582	Triode	2SD882
V583	Triode	2SC3852
N101	IC	LA76835
D701	IC	CH04T1223-5Z42
D702	IC	AT24C08
NV01	IC	KA2192B
NV01	IC	S1H2192A01-A0B0
N141	IC	μPC574J
N141	IC	CW574CS
N141	IC	KA33V
F501	Delay fuse	U/C/T 51S-4A-125VAC ⚠FDA
G201	Crystal oscillator	JA18B-3.579545MHz
G701	Crystal oscillator	JA18D-32.768KHz
Z101	Surface acoustic wave filter	LBN49.5-58ML
Z101	Surface acoustic wave filter	LBN45.75M
XS801	AV terminals	AVL-43-9R-B
XS804	S-VIDEO terminal	PH-S

PARTS LIST (continued)

Position	Parts	Type
U101	Tuner	TDQ-3B8/136 ⚠FDA
XT501	Degaussing coil	XC-21(JUB4.759.020) ⚠FDA
V432	Triode	3DD1651 ⚠FDA
V432	Triode	3DD2102 ⚠FDA
V513	Triode	2SC4423-M ⚠FDA
N301	IC	LA7840
N301	IC	LA7840L
N191	IC	TDA7057AQ
N503	IC	L7805CV
N503	IC	AN7805
N503	IC	CW7805CS
N503	IC	MC7805CT
R423	Carbon film resistor	RT13-0.166W-1.5KΩJ
R423	Carbon film resistor	RT13-0.166W-1.8KΩJ
R269A	Carbon film resistor	RT13-0.166W-2.2KΩJ
R735	Carbon film resistor	RT13-0.166W-3.9KΩJ
R723A	Carbon film resistor	RT13-0.166W-10KΩJ
		2.Parts on CRT RGB PCB
R902	Carbon film resistor	RT14-0.25W-15ΩJ
R913	Carbon film resistor	RT14-0.25W-15ΩJ
R903	Carbon film resistor	RT14-0.25W-470ΩJ
R905	Carbon film resistor	RT14-0.25W-470ΩJ
R907	Carbon film resistor	RT14-0.25W-470ΩJ
R909	Carbon film resistor	RT14-0.25W-680ΩJ
RW01	Carbon film resistor	RT14-0.25W-680ΩJ
RW02	Carbon film resistor	RT14-0.25W-680ΩJ
RW03	Carbon film resistor	RT14-0.25W-680ΩJ
R904	Carbon film resistor	RT14-0.25W-750ΩJ
R906	Carbon film resistor	RT14-0.25W-750ΩJ
R908	Carbon film resistor	RT14-0.25W-750ΩJ
R911	Carbon film resistor	RT14-0.25W-1KΩJ
R912	Carbon film resistor	RT14-0.25W-1KΩJ
R910	Carbon film resistor	RT14-0.25W-2.7KΩJ
R917	Carbon film resistor	RT15-0.5W-1.2KΩJ
R917	Metal oxide film resistor	RY21-1W-1.2KΩJ
R918	Carbon film resistor	RT15-0.5W-1.2KΩJ
R918	Metal oxide film resistor	RY21-1W-1.2KΩJ
R919	Carbon film resistor	RT15-0.5W-1.2KΩJ
R919	Metal oxide film resistor	RY21-1W-1.2KΩJ
R914	Metal oxide film resistor	RY21-2W-18KΩJ
R915	Metal oxide film resistor	RY21-2W-18KΩJ
R916	Metal oxide film resistor	RY21-2W-18KΩJ

PARTS LIST (continued)

Position	Parts	Type
C901	Ceramic capacitor	CT1-63V-06a-2B4-330PFK
C902	Ceramic capacitor	CT1-63V-06a-2B4-330PFK
C903	Ceramic capacitor	CT1-63V-06a-2B4-330PFK
C910	Ceramic capacitor	CT81-1KV-10c-2B4-1000PFM
C909	Ceramic capacitor	CD85-E2GA102MYHS ⚠FDA
C909	Ceramic capacitor	CT71-400VAC-10d-2E4-1000PFM- ⚠FDA
C909	Ceramic capacitor	CT81-400VAC-11C-2E4-1000PFM- ⚠FDA
C906	Aluminum electrolytic capacitor	CD110X-16V-100μFM
C907	Aluminum electrolytic capacitor	CD110-50V-0.47μFM
C904	Aluminum electrolytic capacitor	CD110-50V-10μFM
C905	Aluminum electrolytic capacitor	CD110-50V-22μFM
C908	Aluminum electrolytic capacitor	CD110X-250V-22μFM
C908	Aluminum electrolytic capacitor	UVR2E220MHA1AA
L901	Fixed inductor	LGB0606-10μHK
D901	Diode	1N4148
D901	Diode	2CK75D
D902	Diode	1N4148
D902	Diode	2CK75D
D903	Diode	1N4148
D903	Diode	2CK75D
D904	Diode	1N4148
D904	Diode	2CK75D
D905	Diode	1N4148
D905	Diode	2CK75D
D906	Diode	1N4148
D906	Diode	2CK75D
V905	Triode	3CG1015-Y
V905	Triode	2SA1015-Y
V905	Triode	2PA1015-Y
V904	Triode	3DG1815-Y
V904	Triode	2SC1815-Y
V904	Triode	2PC1815-Y
V901	Triode	3DG2482(FA-1)
V901	Triode	3DG2688-L
V901	Triode	2SC2688-L
V901	Triode	3DA2688
V901	Triode	2SC2482
V902	Triode	3DG2482(FA-1)
V902	Triode	3DG2688-L
V902	Triode	2SC2688-L
V902	Triode	3DA2688
V902	Triode	2SC2482
V903	Triode	3DG2482(FA-1)

PARTS LIST (continued)

Position	Parts	Type
V903	Triode	3DG2688-L
V903	Triode	2SC2688-L
V903	Triode	3DA2688
V903	Triode	2SC2482
GZ01	GZS CRT socket	GZS10-2-108 ⚠FDA
		3.Parts on Control Buttons PCB(JUC7.820.616)
R931	Carbon film resistor	RT13-0.166W-270ΩJ
R924	Carbon film resistor	RT13-0.166W-4.7KΩJ
R935	Carbon film resistor	RT13-0.166W-4.7KΩJ
R933	Carbon film resistor	RT13-0.166W-18KΩJ
R936	Carbon film resistor	RT13-0.166W-18KΩJ
S901	Feather touch switch	KA1W6×5-41
S902	Feather touch switch	KA1W6×5-41
S903	Feather touch switch	KA1W6×5-41
S904	Feather touch switch	KA1W6×5-41
S905	Feather touch switch	KA1W6×5-41
S906	Feather touch switch	KA1W6×5-41
		4.Parts on Remote Control PCB
R988	Carbon film resistor	RT13-0.166W-1KΩJ
VD921	Diode	FG5RD
N945	IC	HS0038A
N945	IC	HS0038A2
		5.Control Button PCB for DVD
RDK02	Carbon film resistor	RT13-0.166W-4.7KΩJ
RDK03	Carbon film resistor	RT13-0.166W-5.6KΩJ
RDK01	Carbon film resistor	RT13-0.166W-6.8KΩJ
KK07	Feather touch switch	KA1W6×5-41
KK08	Feather touch switch	KA1W6×5-41
KK09	Feather touch switch	KA1W6×5-41
KK10	Feather touch switch	KA1W6×5-41
		6.Power PCB for DVD
RD22	Carbon film resistor	RT13-0.166W-10ΩJ
RD37	Carbon film resistor	RT13-0.166W-22ΩJ
JD12	Carbon film resistor	RT13-0.166W-22ΩJ
RD27	Carbon film resistor	RT13-0.166W-82ΩJ
RD16	Carbon film resistor	RT13-0.166W-82ΩJ
RD87	Carbon film resistor	RT13-0.166W-82ΩJ
RD88	Carbon film resistor	RT13-0.166W-82ΩJ
JD07	Carbon film resistor	RT13-0.166W-100ΩJ

PARTS LIST (continued)

Position	Parts	Type
RD80	Carbon film resistor	RT13-0.166W-100ΩJ
JD03	Carbon film resistor	RT13-0.166W-100ΩJ
RD21	Carbon film resistor	RT13-0.166W-100ΩJ
RD89	Carbon film resistor	RT13-0.166W-100ΩJ
RD90	Carbon film resistor	RT13-0.166W-100ΩJ
RD91	Carbon film resistor	RT13-0.166W-100ΩJ
R201	Glass glazed potentiometer	WI06-2Y-0.125W-1KΩ-A
RD83	Carbon film resistor	RT13-0.166W-220ΩJ
RD08	Carbon film resistor	RT13-0.166W-1KΩJ
RD14	Carbon film resistor	RT13-0.166W-1KΩJ
RD23	Carbon film resistor	RT13-0.166W-1KΩJ
RD40	Carbon film resistor	RT13-0.166W-1KΩJ
RD43	Carbon film resistor	RT13-0.166W-1KΩJ
RD01	Carbon film resistor	RT13-0.166W-2.2KΩJ
RD02	Carbon film resistor	RT13-0.166W-2.2KΩJ
RD03	Carbon film resistor	RT13-0.166W-2.2KΩJ
RD25	Carbon film resistor	RT13-0.166W-3KΩJ
RD24	Carbon film resistor	RT13-0.166W-3.9KΩJ
RD04	Carbon film resistor	RT13-0.166W-5.1KΩJ
RD30	Carbon film resistor	RT13-0.166W-5.1KΩJ
RD49	Carbon film resistor	RT13-0.166W-8.2KΩJ
RD12	Carbon film resistor	RT13-0.166W-10KΩJ
RD10	Carbon film resistor	RT13-0.166W-15KΩJ
RD05	Carbon film resistor	RT13-0.166W-22KΩJ
RD11	Carbon film resistor	RT13-0.166W-22KΩJ
RD38	Carbon film resistor	RT13-0.166W-22KΩJ
RD41	Carbon film resistor	RT13-0.166W-22KΩJ
RD06	Carbon film resistor	RT13-0.166W-47KΩJ
RD09	Carbon film resistor	RT13-0.166W-47KΩJ
RD39	Carbon film resistor	RT13-0.166W-47KΩJ
RD42	Carbon film resistor	RT13-0.166W-47KΩJ
RD13	Carbon film resistor	RT13-0.166W-47KΩJ
RD07	Carbon film resistor	RT13-0.166W-82KΩJ
RD33	Carbon film resistor	RT14-0.25W-820KΩJ
RD47	Metal oxide film resistor	RY21-0.5W-1KΩJ
RD35	Metal oxide film resistor	RY21-1W-1ΩJ
RD44	Metal oxide film resistor	RY21-1W-100ΩJ
RD45	Metal oxide film resistor	RY21-1W-100ΩJ
RD46	Metal oxide film resistor	RY21-1W-300ΩJ
RD36	Metal oxide film resistor	RY21-1W-47KΩJ
RD34	Metal oxide film resistor	RY21-1W-100KΩJ
CD01	Ceramic capacitor	CT1-63V-08C-2B4-4700PFK
CD02	Ceramic capacitor	CT1-63V-08C-SL-470PFJ

PARTS LIST (continued)

Position	Parts	Type
CD04	Ceramic capacitor	CT1-63V-08C-SL-470PFJ
CD03	Ceramic capacitor	CL11-160V-1000PF
CD81	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
CD83	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
CD84	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
VD10BE	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
CD16	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
CD30	Ceramic capacitor	CT1-63V-08a-2F4-10nFZ
CD26	Ceramic capacitor	CT81-1KV-16c-2E4-103PF
CD27	Ceramic capacitor	CT81-1KV-08c-2B4-100PFK
CD08	Ceramic capacitor	CS1-50V-06/08C-3F4-104S
CD15	Ceramic capacitor	CT81-250VAC-2E4-2200PFM ⚠FDA
CD20	Polyester film capacitor	CL21X-50V-0.1μFJ
CD21	Aluminum electrolytic capacitor	CD293-400V-100μFM
CD22	Aluminum electrolytic capacitor	CD110-50V-4.7μFM
VD86BE	Aluminum electrolytic capacitor	CD110-50V-10μFM
CD12	Aluminum electrolytic capacitor	CD110-50V-10μFM
CD13	Aluminum electrolytic capacitor	CD110-50V-10μFM
CD10	Aluminum electrolytic capacitor	CD110-50V-10μFM
CD11	Aluminum electrolytic capacitor	CD110-50V-10μFM
CD09	Aluminum electrolytic capacitor	CD110-50V-10μFM
CD41	Aluminum electrolytic capacitor	CD110-50V-10μFM
CD42	Aluminum electrolytic capacitor	CD110-50V-10μFM
CD29	Aluminum electrolytic capacitor	CD110-50V-10μFM
CD05	Aluminum electrolytic capacitor	CD110-16V-47μFM
CD80	Aluminum electrolytic capacitor	CD110-16V-47μFM
CD82	Aluminum electrolytic capacitor	CD110X-25V-220μFM
CD36	Aluminum electrolytic capacitor	CD110X-25V-220μFM
CD32	Aluminum electrolytic capacitor	CD110X-25V-220μFM
CD33	Aluminum electrolytic capacitor	CD110-16V-1000μFM
CD34	Aluminum electrolytic capacitor	CD110-25V-470μFM
CD37	Aluminum electrolytic capacitor	CD110-25V-470μFM
CD38	Aluminum electrolytic capacitor	CD110-25V-470μFM
CD39	Aluminum electrolytic capacitor	CD110-25V-470μFM
CD43	Aluminum electrolytic capacitor	CD110-25V-470μFM
CD06	Polypropylene capacitor	2222 335 54104 ⚠FDA
CD18	Polypropylene capacitor	2222 335 54104 ⚠FDA
L1	Line filter	LCL-A04
L2	Line filter	LCL-A04
L4	Fixed inductor	LGT-4UH
L21	Fixed inductor	LGT-4UH
L3	Fixed inductor	LGT-7UH
FL1	Relay	JZC-36F-005-HS ⚠FDA

PARTS LIST (continued)

Position	Parts	Type
Q1	IC	STP3NC60FP
N01	IC	UC3842P
N02	IC	HEF4053BP
N02	IC	HEF4053BP
N03	IC	HCF4053BE
N03	IC	HCF4053BE
U3	IC	TL431C
VD07	Photo coupler	PS2501-1 ⚠FDA
VD07	Photo coupler	PS2561-1 ⚠FDA
VDD01	Diode	1N4148
VDD01	Diode	2CK75D
VDD04	Diode	1N4148
VDD04	Diode	2CK75D
VDD02	Diode	1N4007
VDD03	Diode	1N4007
VDD05	Diode	1N4007
VDD06	Diode	1N4007
VDD08	Diode	1N4007
VDD07	Diode	HER103
VDD09	Diode	HER103
VDD10	Diode	HER303
VDD11	Diode	HER303
VDD12	Diode	HER303
F1	Delay fuse	CCEE/R/S/V/I 50F F2AL 250V ⚠FDA
T1	Switch transformer	BCK52803L ⚠FDA
VD02	Triode	2SC2655-Y
VD03	Triode	3DG1815-Y
VD03	Triode	2SC1815-Y
VD03	Triode	2PC1815-Y
VD04	Triode	3DG1815-Y
VD04	Triode	2SC1815-Y
VD04	Triode	2PC1815-Y
VD05	Triode	3DG1815-Y
VD05	Triode	2SC1815-Y
VD05	Triode	2PC1815-Y
VD12	Triode	3DG1815-Y
VD12	Triode	2SC1815-Y
VD12	Triode	2PC1815-Y
VD13	Triode	3DG1815-Y
VD13	Triode	2SC1815-Y
VD13	Triode	2PC1815-Y
VD06	Triode	3DG1815-Y
VD06	Triode	2SC1815-Y

PARTS LIST (continued)

Position	Parts	Type
VD06	Triode	2PC1815-Y
		Other Parts
VE901	21"CRT	A51QDX992X001 ⚠FDA
B301	Electric speaker	YDT59-A3-10W-8Ω
B302	Electric speaker	YDT59-A3-10W-8Ω
XS501	Power cord	RVVZ-2U2M-C21-TJC1-3Y ⚠FDA
		When using an ORION CRT, remove the following parts
		from the parts list when using a Samsung CRT.
		Parts on Main PCB
C435	Polypropylene capacitor	CBB81-1.6KV-7200PFJ ⚠FDA
C435	Polypropylene capacitor	CBB81-1.6KV-7200PFJ
C436	Ceramic capacitor	CT81-2KV-12c-2B4-680PFK ⚠FDA
L441	Horizontal amplitude inductor	TLN0028C(JU4.756.034) ⚠FDA
RF481	Fuse resistor	RF11-2W-2.7ΩJ
		Other Parts
VE901	21" CRT	A51QDX992X001 ⚠FDA
		When using an ORION CRT, add the following parts
		to the parts list when using a Samsung CRT.
		Parts on Main PCB
C435	Polypropylene capacitor	CBB81-1.6KV-9100PFJ ⚠FDA
C435	Polypropylene capacitor	CBB81-1.6KV-9100PFJ ⚠FDA
L441	Horizontal amplitude inductor	HFT550 ⚠FDA
RF481	Fuse resistor	RF11-2W-2.2ΩJ
		Other Parts
VE901	21" CRT	A51QDK090X011 ⚠FDA
		When using a BMCC CRT, remove the following parts
		from the parts list when using a Samsung CRT.
		Parts on Main PCB
R423	Carbon film resistor	RT13-0.166W-1.2KΩJ
C442	Polypropylene capacitor	CBB13-400V-0.33μFJ ⚠FDA
C442	Polypropylene capacitor	CBB13-400V-0.33μFJ ⚠FDA
C436	Ceramic capacitor	CT81-2KV-12c-2B4-680PFK ⚠FDA
		Other Parts
VE901	21" CRT	A51QDX992X001 ⚠FDA
		When using a BMCC CRT, add the following parts
		to the parts list when using a Samsung CRT.
		Parts on Main PCB
R423	Carbon film resistor	RT13-0.166W-1.8KΩJ
C442	Polypropylene capacitor	CBB13-400V-0.27μFJ ⚠FDA
C442	Polypropylene capacitor	CBB13-400V-0.27μFJ ⚠FDA
C436	Ceramic capacitor	CT81-2KV-12c-2B4-1200PFK ⚠FDA
		Other Parts

PARTS LIST (continued)

Position	Parts	Type
VE901	21″ CRT	A51LXR195X91J ⚠FDA
		DVD127 Module
C78	Chip Capacitor	CC41-0805CG220J500NT
C174	Chip Capacitor	CC41-0805CG220J500NT
C175	Chip Capacitor	CC41-0805CG220J500NT
C15	Chip Capacitor	CC41-0805CG270J500NT
C16	Chip Capacitor	CC41-0805CG270J500NT
C86	Chip Capacitor	CC41-0805CG331J500NT
C89	Chip Capacitor	CC41-0805CG331J500NT
C5	Chip Capacitor	CC41-0805CG471J500NT
C6	Chip Capacitor	CC41-0805CG471J500NT
C7	Chip Capacitor	CC41-0805CG471J500NT
C8	Chip Capacitor	CC41-0805CG471J500NT
C14	Chip Capacitor	CC41-0805CG102J500NT
C85	Chip Capacitor	CT41-0805BG272K500NT
C88	Chip Capacitor	CT41-0805BG272K500NT
C3	Chip Capacitor	CC41-0805F104Z500NT
C4	Chip Capacitor	CC41-0805F104Z500NT
C19	Chip Capacitor	CC41-0805F104Z500NT
C20	Chip Capacitor	CC41-0805F104Z500NT
C21	Chip Capacitor	CC41-0805F104Z500NT
C22	Chip Capacitor	CC41-0805F104Z500NT
C23	Chip Capacitor	CC41-0805F104Z500NT
C24	Chip Capacitor	CC41-0805F104Z500NT
C25	Chip Capacitor	CC41-0805F104Z500NT
C28	Chip Capacitor	CC41-0805F104Z500NT
C29	Chip Capacitor	CC41-0805F104Z500NT
C30	Chip Capacitor	CC41-0805F104Z500NT
C31	Chip Capacitor	CC41-0805F104Z500NT
C35	Chip Capacitor	CC41-0805F104Z500NT
C36	Chip Capacitor	CC41-0805F104Z500NT
C38	Chip Capacitor	CC41-0805F104Z500NT
C39	Chip Capacitor	CC41-0805F104Z500NT
C41	Chip Capacitor	CC41-0805F104Z500NT
C44	Chip Capacitor	CC41-0805F104Z500NT
C48	Chip Capacitor	CC41-0805F104Z500NT
C53	Chip Capacitor	CC41-0805F104Z500NT
C54	Chip Capacitor	CC41-0805F104Z500NT
C55	Chip Capacitor	CC41-0805F104Z500NT
C57	Chip Capacitor	CC41-0805F104Z500NT

PARTS LIST (continued)

Position	Parts	Type
C58	Chip Capacitor	CC41-0805F104Z500NT
C59	Chip Capacitor	CC41-0805F104Z500NT
C60	Chip Capacitor	CC41-0805F104Z500NT
C61	Chip Capacitor	CC41-0805F104Z500NT
C66	Chip Capacitor	CC41-0805F104Z500NT
C81	Chip Capacitor	CC41-0805F104Z500NT
C114	Chip Capacitor	CC41-0805F104Z500NT
C162	Chip Capacitor	CC41-0805F104Z500NT
C171	Chip Capacitor	CC41-0805F104Z500NT
C190	Chip Capacitor	CC41-0805F104Z500NT
R22	Chip Resistor	RC-05K000JT
R24	Chip Resistor	RC-05K000JT
R50	Chip Resistor	RC-05K000JT
C18	Chip Resistor	RC-05K000JT
C33	Chip Resistor	RC-05K000JT
C34	Chip Resistor	RC-05K000JT
C51	Chip Resistor	RC-05K000JT
R152	Chip Resistor	RC-05K4R7JT
R30	Chip Resistor	RC-05K100JT
R10	Chip Resistor	RC-05K330JT
R13	Chip Resistor	RC-05K330JT
R29	Chip Resistor	RC-05K330JT
R34	Chip Resistor	RC-05K330JT
R65	Chip Resistor	RC-05K330JT
R66	Chip Resistor	RC-05K330JT
R16	Chip Resistor	RC-05K750JT
R18	Chip Resistor	RC-05K750JT
R20	Chip Resistor	RC-05K750JT
R21	Chip Resistor	RC-05K750JT
R173	Chip Resistor	RC-05K910JT
R17	Chip Resistor	RC-05K271JT
R172	Chip Resistor	RC-05K331JT
R31	Chip Resistor	RC-05K102JT
R32	Chip Resistor	RC-05K102JT
R43	Chip Resistor	RC-05K102JT
R54	Chip Resistor	RC-05K102JT
R56	Chip Resistor	RC-05K102JT
R58	Chip Resistor	RC-05K102JT
R148	Chip Resistor	RC-05K102JT
R149	Chip Resistor	RC-05K202JT
R123	Chip Resistor	RC-05K392JT
R126	Chip Resistor	RC-05K392JT
R150	Chip Resistor	RC-05K392JT

PARTS LIST (continued)

Position	Parts	Type
R1	Chip Resistor	RC-05K472JT
R4	Chip Resistor	RC-05K472JT
R5	Chip Resistor	RC-05K472JT
R7	Chip Resistor	RC-05K472JT
R9	Chip Resistor	RC-05K472JT
R33	Chip Resistor	RC-05K472JT
R48	Chip Resistor	RC-05K472JT
R49	Chip Resistor	RC-05K472JT
R122	Chip Resistor	RC-05K562JT
R125	Chip Resistor	RC-05K562JT
R128	Chip Resistor	RC-05K562JT
R129	Chip Resistor	RC-05K562JT
R124	Chip Resistor	RC-05K822JT
R127	Chip Resistor	RC-05K822JT
R55	Chip Resistor	RC-05K103JT
R57	Chip Resistor	RC-05K103JT
R139	Chip Resistor	RC-05K103JT
R151	Chip Resistor	RC-05K203JT
R145	Chip Resistor	RC-05K223JT
R2	Chip Resistor	RC-05K104JT
R3	Chip Resistor	RC-05K104JT
R36	Chip Resistor	RC-05K104JT
R53	Resistor	RT14-0.25W-22ΩJ
R142	Resistor	RT14-0.25W-300ΩJ
RN3	Chip ROW Resistor	RCML08W100JT
RN4	Chip ROW Resistor	RCML08W100JT
RN5	Chip ROW Resistor	RCML08W100JT
RN2	Chip ROW Resistor	RCML08W330JT
RN8	Chip ROW Resistor	RCML08W330JT
RN9	Chip ROW Resistor	RCML08W330JT
RN10	Chip ROW Resistor	RCML08W330JT
RN11	Chip ROW Resistor	RCML08W330JT
RN12	Chip ROW Resistor	RCML08W330JT
RN6	Chip ROW Resistor	RCML08W470JT
RN7	Chip ROW Resistor	RCML08W470JT
L1	Chip Inductor	CMI2012U1R8KT
L2	Chip Inductor	CMI2012U1R8KT
L4	Chip Inductor	CMI2012U3R3KT
L6	Chip Bead	CBG2012U102T
L7	Chip Bead	CBG2012U102T
L8	Chip Bead	CBG2012U102T
L9	Chip Bead	CBG2012U102T
L10	Chip Bead	CBG2012U102T

PARTS LIST (continued)

Position	Parts	Type
L11	Chip Bead	CBG2012U102T
L12	Chip Bead	CBG2012U102T
L13	Chip Bead	CBG2012U102T
L14	Chip Bead	CBG2012U102T
L15	Chip Bead	CBG2012U102T
VD8	Diode	W05Z5.1C
V2	Chip Transistor	MMBT3904
V3	Chip Transistor	MMBT3904
V4	Chip Transistor	MMBT3906
V5	Chip Transistor	MMBT3906
V6	Chip Transistor	MMBT3906
V1	Transistor	3G8050C
C26	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C32	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C37	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C42	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C43	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C45	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C46	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C47	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C52	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C56	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C62	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C63	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C64	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C65	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C172	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C173	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C84	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C167	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C170	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C125	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C176	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C1	Aluminum Electrolytic Capacitor	CD110X-16V-220uFM
C49	Aluminum Electrolytic Capacitor	CD110X-16V-220uFM
C50	Aluminum Electrolytic Capacitor	CD110X-16V-220uFM
C113	Aluminum Electrolytic Capacitor	CD110X-16V-220uFM
G1	Crystal OSC	JA18A-27MHZ
XS1	Connector	1-440094-2
D1	IC	ES6008F
D2	IC	AT49F8192AT-90RC
D3	IC	IS42S16400-7T
D5	IC	CS4334

PARTS LIST (continued)

Position	Parts	Type
D6	IC	AT24C01A-10SC
N1	IC	74HCU04
N2	IC	BA4558F
N3	IC	IMP809MEUR-T
N4	IC	L78L05ACZ
	Disc tray DSL-710A	
	Parts	
	Loader assembly	JUC5.049.191
	CRT assembly	JUC5.370.087
	Ground wire	T/JU5.569.085 ⚠FDA
	Radiator assembly I	T/JU5.861.169
N503	Heat sinking assembly	JUC5.861.266
V513	Heat sinking assembly	JUC5.861.058
V432	Heat sinking assembly	JUC5.861.059
N191	Heat sinking assembly	JUC5.861.226
N301	Heat sinking assembly	JUC5.861.240
Q1	Radiator assembly II	JUC5.861.260
	Front cover assembly	JUC6.116.550
	CRT support	JUC6.152.007
	Plastic expansive rivet	JU6.152.239 ⚠FDA
	Control buttons assembly on TV unit	JUC6.177.057
	Control buttons assembly on DVD unit	JUC6.177.058
	Handle assembly	JU6.465.022
	Wired connector XDK01	JUC6.604.718
	Wired connector XP06	JUC6.604.787 ⚠FDA
	Wired connector XP03	JUC6.604.786 ⚠FDA
	Wired connector XS10A	JUC6.604.127 ⚠FDA
	Wired connector XS10B	JUC6.604.128 ⚠FDA
	Wired connector KDY	JUC6.604.210 ⚠FDA
XS161	Wired connector XS161	JUC6.604.602 ⚠FDA
	Wired connector XS	JUC6.604.773 ⚠FDA
	Wired connector XS601	JUC6.604.774 ⚠FDA
XS799	Wired connector XS799	JUC6.604.706 ⚠FDA
XS703	Wired connector XS703	JUC6.604.707 ⚠FDA
XS708	Wired connector XS708	JUC6.604.775 ⚠FDA
	Wired connector XP11	JUC6.604.753 ⚠FDA
	Wired connector XP05	JUC6.604.754 ⚠FDA
		When using DVD128/DVD129, remove the following parts.

PARTS LIST (continued)

Position	Parts	Type
		DVD128 M+F1193odule
VDD10		(JUV2.033.056MX)
L21		
CD34	Chip Capacitor	CC41-0603CG100J500NT
CD39	Chip Capacitor	CC41-0603CG220J500NT
RD48	Chip Capacitor	CC41-0603CG220J500NT
RD46	Chip Capacitor	CC41-0603CG220J500NT
RD003	Chip Capacitor	CC41-0603CG220J500NT
	Chip Capacitor	CC41-0603CG270J500NT
	Chip Capacitor	CC41-0603CG270J500NT
	Chip Capacitor	CC41-0603CG101J500NT
	Chip Capacitor	CC41-0603CG101J500NT
C5	Chip Capacitor	CC41-0603CG101J500NT
C26	Chip Capacitor	CC41-0603CG101J500NT
C27	Chip Capacitor	CC41-0603CG101J500NT
C54	Chip Capacitor	CC41-0603CG101J500NT
C85	Chip Capacitor	CC41-0603B151J500NT
C2	Chip Capacitor	CC41-0603B151J500NT
C135	Chip Capacitor	CC41-0603B151J500NT
C37	Chip Capacitor	CC41-0603B151J500NT
C44	Chip Capacitor	CC41-0603B151J500NT
C52	Chip Capacitor	CC41-0603B151J500NT
CB83	Chip Capacitor	CC41-0603B221J500NT
CB87	Chip Capacitor	CC41-0603B221J500NT
CB88	Chip Capacitor	CC41-0603B221J500NT
C28	Chip Capacitor	CC41-0603B221J500NT
C30	Chip Capacitor	CC41-0603B221J500NT
C33	Chip Capacitor	CC41-0603B221J500NT
C34	Chip Capacitor	CC41-0603B221J500NT
C74	Chip Capacitor	CC41-0603B331J500NT
C79	Chip Capacitor	CC41-0603B331J500NT
C117	Chip Capacitor	CC41-0603B331J500NT
C118	Chip Capacitor	CC41-0603B391J500NT
C125	Chip Capacitor	CC41-0603B391J500NT
C126	Chip Capacitor	CC41-0603B391J500NT

PARTS LIST (continued)

Position	Parts	Type
C131	Chip Capacitor	CC41-0603B391J500NT
C132	Chip Capacitor	CC41-0603B471J500NT
C134	Chip Capacitor	CC41-0603B102K500NT
C47	Chip Capacitor	CC41-0603B102K500NT
C48	Chip Capacitor	CC41-0603B102K500NT
C119	Chip Capacitor	CC41-0603B102K500NT
C6	Chip Capacitor	CC41-0603B102K500NT
C7	Chip Capacitor	CC41-0603B102K500NT
C164	Chip Capacitor	CC41-0603B102K500NT
C165	Chip Capacitor	CC41-0603B103J500NT
C8	Chip Capacitor	CC41-0603B103J500NT
C21	Chip Capacitor	CC41-0603B103J500NT
C23	Chip Capacitor	CC41-0603B103J500NT
C29	Chip Capacitor	CC41-0603B103J500NT
C31	Chip Capacitor	CC41-0603B103J500NT
C53	Chip Capacitor	CC41-0603B153K500NT
C77	Chip Capacitor	CC41-0603B153K500NT
C82	Chip Capacitor	CC41-0603B153K500NT
C39	Chip Capacitor	CC41-0603B333K500NT
C40	Chip Capacitor	CC41-0603F104Z500NT
C41	Chip Capacitor	CC41-0603F104Z500NT
C42	Chip Capacitor	CC41-0603F104Z500NT
C43	Chip Capacitor	CC41-0603F104Z500NT
CB45	Chip Capacitor	CC41-0603F104Z500NT
C4	Chip Capacitor	CC41-0603F104Z500NT
C22	Chip Capacitor	CC41-0603F104Z500NT
C49	Chip Capacitor	CC41-0603F104Z500NT
C9	Chip Capacitor	CC41-0603F104Z500NT
CB1	Chip Capacitor	CC41-0603F104Z500NT
CB2	Chip Capacitor	CC41-0603F104Z500NT
CB3	Chip Capacitor	CC41-0603F104Z500NT
CB4	Chip Capacitor	CC41-0603F104Z500NT
CB5	Chip Capacitor	CC41-0603F104Z500NT
CB6	Chip Capacitor	CC41-0603F104Z500NT
CB7	Chip Capacitor	CC41-0603F104Z500NT
CB8	Chip Capacitor	CC41-0603F104Z500NT
CB9	Chip Capacitor	CC41-0603F104Z500NT
CB10	Chip Capacitor	CC41-0603F104Z500NT
CB11	Chip Capacitor	CC41-0603F104Z500NT
CB12	Chip Capacitor	CC41-0603F104Z500NT
CB13	Chip Capacitor	CC41-0603F104Z500NT
CB14	Chip Capacitor	CC41-0603F104Z500NT
CB15	Chip Capacitor	CC41-0603F104Z500NT

PARTS LIST (continued)

Position	Parts	Type
CB16	Chip Capacitor	CC41-0603F104Z500NT
CB17	Chip Capacitor	CC41-0603F104Z500NT
CB18	Chip Capacitor	CC41-0603F104Z500NT
CB19	Chip Capacitor	CC41-0603F104Z500NT
CB20	Chip Capacitor	CC41-0603F104Z500NT
CB21	Chip Capacitor	CC41-0603F104Z500NT
CB22	Chip Capacitor	CC41-0603F104Z500NT
CB23	Chip Capacitor	CC41-0603F104Z500NT
CB24	Chip Capacitor	CC41-0603F104Z500NT
CB25	Chip Capacitor	CC41-0603F104Z500NT
CB26	Chip Capacitor	CC41-0603F104Z500NT
CB27	Chip Capacitor	CC41-0603F104Z500NT
CB28	Chip Capacitor	CC41-0603F104Z500NT
CB29	Chip Capacitor	CC41-0603F104Z500NT
CB30	Chip Capacitor	CC41-0603F104Z500NT
CB31	Chip Capacitor	CC41-0603F104Z500NT
CB32	Chip Capacitor	CC41-0603F104Z500NT
CB33	Chip Capacitor	CC41-0603F104Z500NT
CB34	Chip Capacitor	CC41-0603F104Z500NT
CB35	Chip Capacitor	CC41-0603F104Z500NT
CB36	Chip Capacitor	CC41-0603F104Z500NT
CB37	Chip Capacitor	CC41-0603F104Z500NT
CB38	Chip Capacitor	CC41-0603F104Z500NT
CB39	Chip Capacitor	CC41-0603F104Z500NT
CB40	Chip Capacitor	CC41-0603F104Z500NT
CB41	Chip Capacitor	CC41-0603F104Z500NT
CB42	Chip Capacitor	CC41-0603F104Z500NT
CB43	Chip Capacitor	CC41-0603F104Z500NT
CB44	Chip Capacitor	CC41-0603F104Z500NT
CB46	Chip Capacitor	CC41-0603F104Z500NT
CB47	Chip Capacitor	CC41-0603F104Z500NT
CB49	Chip Capacitor	CC41-0603F104Z500NT
CB50	Chip Capacitor	CC41-0603F104Z500NT
CB51	Chip Capacitor	CC41-0603F104Z500NT
CB52	Chip Capacitor	CC41-0603F104Z500NT
CB53	Chip Capacitor	CC41-0603F104Z500NT
CB54	Chip Capacitor	CC41-0603F104Z500NT
CB55	Chip Capacitor	CC41-0603F104Z500NT
CB56	Chip Capacitor	CC41-0603F104Z500NT
CB57	Chip Capacitor	CC41-0603F104Z500NT
CB58	Chip Capacitor	CC41-0603F104Z500NT
CB59	Chip Capacitor	CC41-0603F104Z500NT
CB60	Chip Capacitor	CC41-0603F104Z500NT

PARTS LIST (continued)

Position	Parts	Type
CB61	Chip Capacitor	CC41-0603F104Z500NT
CB63	Chip Capacitor	CC41-0603F104Z500NT
CB64	Chip Capacitor	CC41-0603F104Z500NT
CB65	Chip Capacitor	CC41-0603F104Z500NT
CB66	Chip Capacitor	CC41-0603F104Z500NT
CB67	Chip Capacitor	CC41-0603F104Z500NT
CB68	Chip Capacitor	CC41-0603F104Z500NT
CB69	Chip Capacitor	CC41-0603F104Z500NT
CB70	Chip Capacitor	CC41-0603F104Z500NT
CB71	Chip Capacitor	CC41-0603F104Z500NT
CB72	Chip Capacitor	CC41-0603F104Z500NT
CB73	Chip Capacitor	CC41-0603F104Z500NT
CB74	Chip Capacitor	CC41-0603F104Z500NT
CB75	Chip Capacitor	CC41-0603F104Z500NT
CB76	Chip Capacitor	GRM39Y5V105Z10
CB77	Chip Capacitor	GRM39Y5V105Z10
CB78	Chip Capacitor	GRM39Y5V105Z10
CB80	Chip Capacitor	GRM39Y5V105Z10
CB81	Chip Capacitor	GRM39Y5V105Z10
CB92	Chip Capacitor	GRM39Y5V105Z10
CB106	Chip Capacitor	GRM39Y5V105Z10
C51	Chip Capacitor	CL21F105ZANC
C137	Chip Capacitor	CL21F105ZANC
C13	Chip Capacitor	CL21F105ZANC
C14	Chip Capacitor	CL21F105ZANC
C15	Chip Capacitor	CL21F105ZANC
C16	Chip Resistor	RC-03K000JT
C69	Chip Resistor	RC-03K000JT
C70	Chip Resistor	RC-03K000JT
C100	Chip Resistor	RC-03K000JT
C32	Chip Resistor	RC-03K000JT
C38	Chip Resistor	RC-03K000JT
C87	Chip Resistor	RC-03K000JT
C88	Chip Resistor	RC-03K000JT
C107	Chip Resistor	RC-03K000JT
R14	Chip Resistor	RC-03K000JT
R35	Chip Resistor	RC-03K000JT
R44	Chip Resistor	RC-03K000JT
R65	Chip Resistor	RC-03K1R0JT
R69	Chip Resistor	RC-03K100JT
R78	Chip Resistor	RC-03K100JT
R103	Chip Resistor	RC-03K100JT
R120	Chip Resistor	RC-03K100JT

PARTS LIST (continued)

Position	Parts	Type
C61	Chip Resistor	RC-03K100JT
C86	Chip Resistor	RC-03K100JT
C89	Chip Resistor	RC-03K220JT
C90	Chip Resistor	RC-03K220JT
R124	Chip Resistor	RC-03K330JT
R22	Chip Resistor	RC-03K330JT
R27	Chip Resistor	RC-03K330JT
R40	Chip Resistor	RC-03K330JT
R41	Chip Resistor	RC-03K330JT
R42	Chip Resistor	RC-03K330JT
R125	Chip Resistor	RC-03K330JT
R11	Chip Resistor	RC-03K750JT
R12	Chip Resistor	RC-03K750JT
R45	Chip Resistor	RC-03K750JT
R47	Chip Resistor	RC-03K820JT
R48	Chip Resistor	RC-03K101JT
R53	Chip Resistor	RC-03K101JT
R84	Chip Resistor	RC-03K101JT
R85	Chip Resistor	RC-03K101JT
R86	Chip Resistor	RC-03K101JT
R108	Chip Resistor	RC-03K101JT
R114	Chip Resistor	RC-03K102JT
R118	Chip Resistor	RC-03K102JT
R56	Chip Resistor	RC-03K102JT
R68	Chip Resistor	RC-03K102JT
R73	Chip Resistor	RC-03K102JT
R107	Chip Resistor	RC-03K102JT
R109	Chip Resistor	RC-03K102JT
R128	Chip Resistor	RC-03K102JT
R129	Chip Resistor	RC-03K102JT
R39	Chip Resistor	RC-03K102JT
R51	Chip Resistor	RC-03K102JT
R52	Chip Resistor	RC-03K332JT
R79	Chip Resistor	RC-03K332JT
R81	Chip Resistor	RC-03K392FT
R82	Chip Resistor	RC-03K472JT
R93	Chip Resistor	RC-03K472JT
R94	Chip Resistor	RC-03K752JT
R104	Chip Resistor	RC-03K752JT
R140	Chip Resistor	RC-03K822JT
R141	Chip Resistor	RC-03K103JT
R67	Chip Resistor	RC-03K103JT
R72	Chip Resistor	RC-03K103JT

PARTS LIST (continued)

Position	Parts	Type
R62	Chip Resistor	RC-03K103JT
R80	Chip Resistor	RC-03K103JT
R83	Chip Resistor	RC-03K103JT
R5	Chip Resistor	RC-03K103JT
R57	Chip Resistor	RC-03K103JT
R28	Chip Resistor	RC-03K103JT
R1	Chip Resistor	RC-03K103JT
R2	Chip Resistor	RC-03K103JT
R3	Chip Resistor	RC-03K103JT
R4	Chip Resistor	RC-03K103JT
R7	Chip Resistor	RC-03K113JT
R8	Chip Resistor	RC-03K113JT
R23	Chip Resistor	RC-03K153JT
R29	Chip Resistor	RC-03K183JT
R31	Chip Resistor	RC-03K183JT
R36	Chip Resistor	RC-03K183JT
R55	Chip Resistor	RC-03K203JT
R59	Chip Resistor	RC-03K203JT
R145	Chip Resistor	RC-03K203JT
R66	Chip Resistor	RC-03K223JT
R71	Chip Resistor	RC-03K273JT
R37	Chip Resistor	RC-03K333JT
R16	Chip Resistor	RC-03K333JT
R64	Chip Resistor	RC-03K333JT
R70	Chip Resistor	RC-03K393JT
R24	Chip Resistor	RC-03K104JT
R25	Chip Resistor	RC-03K104JT
R26	Chip Resistor	RC-03K104JT
R58	Chip Resistor	RC-03K274JT
R9	Chip Resistor	RC-03K274JT
R21	Chip Resistor	RC-03K334JT
R32	Chip Resistor	RC-03K334JT
R34	Chip Resistor	RC-03K754JT
R50	Chip Resistor	RC-03K754JT
R10	Chip Resistor	RC-03K754JT
R13	Chip Resistor	RC-05K000JT
R43	Chip Resistor	RC-05K000JT
R74	Chip Resistor	RC-05K000JT
R76	Chip Resistor	RC-05K000JT
R121	Chip Resistor	RC-05K000JT
R122	Chip Resistor	RC-05K000JT
R30	Chip Resistor	RC-05K000JT
R119	Chip Resistor	RC-05K010JT

PARTS LIST (continued)

Position	Parts	Type
R123	Chip Resistor	RC-05K010JT
FB1	Chip Resistor	RC-05K010JT
FB4	Chip Resistor	RC-05K010JT
FB5	Chip Resistor	RC-05K101JT
FB6	Chip Resistor	RC-05K201JT
R38	Chip Resistor	RC-05K201JT
R49	Chip Resistor	RC-05K331JT
R61	Resistor	RT14-0.25W-470ΩJ
R17	Chip ROW Resistor	RCML08W330JT
R18	Chip Inductor	CMI2012U1R8KT
R19	Chip Inductor	CMI2012U1R8KT
R20	Chip Inductor	CMI2012U1R8KT
R95	Chip Inductor	CMI2012U3R3KT
R136	Chip Bead	STBH2012-102PT
R137	Chip Bead	STBH2012-102PT
R6	Chip Bead	STBH2012-102PT
R54	Transistor	3G8050C
RN1	Transistor	3G8050C
L16	Transistor	3CG8550C
L17	Transistor	3CG8550C
L18	Transistor	3CG8550C
L22	Transistor	3CG8550C
L5	Chip Diode	RLS4148E
FB7	Chip Diode	RLS4148E
FB8	Chip Diode	RLS4148E
Q13	Chip Diode	RLS4148E
Q14	Chip Diode	RLS4148E
Q4	Chip Diode	RLS4148E
Q5	Chip Diode	RLS4148E
Q11	Chip Diode	RLS4148E
Q12	Chip Transistor	MMBT3904
D1	Chip Transistor	MMBT3904
D3	Chip Transistor	MMBT3904
D5	Chip Transistor	MMBT3904
D7	Chip Transistor	MMBT3906
D9	Chip Transistor	MMBT3906
D11	Chip Transistor	MMBT3906
D13	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
D16	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q9	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q10	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q15	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q17	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM

PARTS LIST (continued)

Position	Parts	Type
Q7	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q8	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q24	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C11	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C35	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C50	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C58	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C75	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C76	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C80	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C81	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C12	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C17	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C18	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C19	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C20	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C24	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C25	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C36	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C45	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C55	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C56	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C57	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C1	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C3	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C10	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C59	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C60	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C62	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C63	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C64	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C65	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C66	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C67	Aluminum Electrolytic Capacitor	CD110X-16V-220uFM
C68	Aluminum Electrolytic Capacitor	CD110X-16V-220uFM
C71	Inductor	LGA0307-33uHK
C72	Inductor	LGA0307-33uHK
C73	Inductor	LGA0307-33uHK
C78	Inductor	LGA0307-33uHK
C83	Inductor	LGA0307-33uHK
C84	Inductor	L-100
C136	Inductor	L-100
C97	Inductor	L-100

PARTS LIST (continued)

Position	Parts	Type
C99	Inductor	L-100
L2	Diode	W05Z5.1A
L3	Crystal OSC	JA18-27MHZ
L4	Connector	PH-4A
L10	Connector	PH-2A
L11	Connector	PH-2A
L6	FPC	52435-2491
L7	IC	RC4558D
L8	IC	L78L05ACZ
L14	IC	AMS1117M-3.3V
D15	IC	NCP111725ST3
Y1	IC	SN74HCU04
JP8	IC	GM72V161621ET8
XS1	IC	GM72V161621ET8
XS3	IC	IS24C02-3G
CN1	IC	AT49F8192AT-70RC
U9	IC	CS4340-KS
U15	IC	CS4955-CQ
U11	IC	MT1336E
U12	IC	MT1369AE
U5	IC	BA5954FM
U16		
U17		DVD129 Module
U10		(JUV2.033.061MX)
U7		
U13	Chip Capacitor	CC41-0603CG100J500NT
U14	Chip Capacitor	CC41-0603CG220J500NT
U1	Chip Capacitor	CC41-0603CG220J500NT
U3	Chip Capacitor	CC41-0603CG220J500NT
U2	Chip Capacitor	CC41-0603CG220J500NT
	Chip Capacitor	CC41-0603CG270J500NT
	Chip Capacitor	CC41-0603CG101J500NT
	Chip Capacitor	CC41-0603CG101J500NT
	Chip Capacitor	CC41-0603CG101J500NT
C5	Chip Capacitor	CC41-0603CG101J500NT
C26	Chip Capacitor	CC41-0603CG101J500NT
C27	Chip Capacitor	CC41-0603CG101J500NT
C54	Chip Capacitor	CC41-0603B151J500NT
C85	Chip Capacitor	CC41-0603B151J500NT
C2	Chip Capacitor	CC41-0603B151J500NT
C37	Chip Capacitor	CC41-0603B151J500NT
C44	Chip Capacitor	CC41-0603B151J500NT
C52	Chip Capacitor	CC41-0603B151J500NT

PARTS LIST (continued)

Position	Parts	Type
CB83	Chip Capacitor	CC41-0603B221J500NT
CB87	Chip Capacitor	CC41-0603B221J500NT
CB88	Chip Capacitor	CC41-0603B221J500NT
C28	Chip Capacitor	CC41-0603B221J500NT
C30	Chip Capacitor	CC41-0603B221J500NT
C33	Chip Capacitor	CC41-0603B221J500NT
C34	Chip Capacitor	CC41-0603B331J500NT
C74	Chip Capacitor	CC41-0603B331J500NT
C79	Chip Capacitor	CC41-0603B331J500NT
C117	Chip Capacitor	CC41-0603B391J500NT
C118	Chip Capacitor	CC41-0603B391J500NT
C125	Chip Capacitor	CC41-0603B391J500NT
C126	Chip Capacitor	CC41-0603B391J500NT
C131	Chip Capacitor	CC41-0603B471J500NT
C132	Chip Capacitor	CC41-0603B102K500NT
C47	Chip Capacitor	CC41-0603B102K500NT
C48	Chip Capacitor	CC41-0603B102K500NT
C119	Chip Capacitor	CC41-0603B102K500NT
C6	Chip Capacitor	CC41-0603B102K500NT
C7	Chip Capacitor	CC41-0603B102K500NT
C164	Chip Capacitor	CC41-0603B102K500NT
C165	Chip Capacitor	CC41-0603B103K500NT
C8	Chip Capacitor	CC41-0603B103K500NT
C21	Chip Capacitor	CC41-0603B103K500NT
C23	Chip Capacitor	CC41-0603B103K500NT
C29	Chip Capacitor	CC41-0603B103K500NT
C31	Chip Capacitor	CC41-0603B153K500NT
C53	Chip Capacitor	CC41-0603B153K500NT
C77	Chip Capacitor	CC41-0603B153K500NT
C82	Chip Capacitor	CC41-0603B333K500NT
C39	Chip Capacitor	CC41-0603F104Z500NT
C40	Chip Capacitor	CC41-0603F104Z500NT
C41	Chip Capacitor	CC41-0603F104Z500NT
C42	Chip Capacitor	CC41-0603F104Z500NT
C43	Chip Capacitor	CC41-0603F104Z500NT
C4	Chip Capacitor	CC41-0603F104Z500NT
C22	Chip Capacitor	CC41-0603F104Z500NT
C49	Chip Capacitor	CC41-0603F104Z500NT
C9	Chip Capacitor	CC41-0603F104Z500NT
CB1	Chip Capacitor	CC41-0603F104Z500NT
CB2	Chip Capacitor	CC41-0603F104Z500NT
CB3	Chip Capacitor	CC41-0603F104Z500NT
CB4	Chip Capacitor	CC41-0603F104Z500NT

PARTS LIST (continued)

Position	Parts	Type
CB5	Chip Capacitor	CC41-0603F104Z500NT
CB6	Chip Capacitor	CC41-0603F104Z500NT
CB7	Chip Capacitor	CC41-0603F104Z500NT
CB8	Chip Capacitor	CC41-0603F104Z500NT
CB9	Chip Capacitor	CC41-0603F104Z500NT
CB10	Chip Capacitor	CC41-0603F104Z500NT
CB11	Chip Capacitor	CC41-0603F104Z500NT
CB12	Chip Capacitor	CC41-0603F104Z500NT
CB13	Chip Capacitor	CC41-0603F104Z500NT
CB14	Chip Capacitor	CC41-0603F104Z500NT
CB15	Chip Capacitor	CC41-0603F104Z500NT
CB16	Chip Capacitor	CC41-0603F104Z500NT
CB17	Chip Capacitor	CC41-0603F104Z500NT
CB18	Chip Capacitor	CC41-0603F104Z500NT
CB19	Chip Capacitor	CC41-0603F104Z500NT
CB20	Chip Capacitor	CC41-0603F104Z500NT
CB21	Chip Capacitor	CC41-0603F104Z500NT
CB22	Chip Capacitor	CC41-0603F104Z500NT
CB23	Chip Capacitor	CC41-0603F104Z500NT
CB24	Chip Capacitor	CC41-0603F104Z500NT
CB25	Chip Capacitor	CC41-0603F104Z500NT
CB26	Chip Capacitor	CC41-0603F104Z500NT
CB27	Chip Capacitor	CC41-0603F104Z500NT
CB28	Chip Capacitor	CC41-0603F104Z500NT
CB29	Chip Capacitor	CC41-0603F104Z500NT
CB30	Chip Capacitor	CC41-0603F104Z500NT
CB31	Chip Capacitor	CC41-0603F104Z500NT
CB32	Chip Capacitor	CC41-0603F104Z500NT
CB33	Chip Capacitor	CC41-0603F104Z500NT
CB34	Chip Capacitor	CC41-0603F104Z500NT
CB35	Chip Capacitor	CC41-0603F104Z500NT
CB36	Chip Capacitor	CC41-0603F104Z500NT
CB37	Chip Capacitor	CC41-0603F104Z500NT
CB38	Chip Capacitor	CC41-0603F104Z500NT
CB39	Chip Capacitor	CC41-0603F104Z500NT
CB40	Chip Capacitor	CC41-0603F104Z500NT
CB41	Chip Capacitor	CC41-0603F104Z500NT
CB42	Chip Capacitor	CC41-0603F104Z500NT
CB43	Chip Capacitor	CC41-0603F104Z500NT
CB44	Chip Capacitor	CC41-0603F104Z500NT
CB45	Chip Capacitor	CC41-0603F104Z500NT
CB46	Chip Capacitor	CC41-0603F104Z500NT
CB47	Chip Capacitor	CC41-0603F104Z500NT

PARTS LIST (continued)

Position	Parts	Type
CB49	Chip Capacitor	CC41-0603F104Z500NT
CB50	Chip Capacitor	CC41-0603F104Z500NT
CB51	Chip Capacitor	CC41-0603F104Z500NT
CB52	Chip Capacitor	CC41-0603F104Z500NT
CB53	Chip Capacitor	CC41-0603F104Z500NT
CB54	Chip Capacitor	CC41-0603F104Z500NT
CB55	Chip Capacitor	CC41-0603F104Z500NT
CB56	Chip Capacitor	CC41-0603F104Z500NT
CB57	Chip Capacitor	CC41-0603F104Z500NT
CB58	Chip Capacitor	CC41-0603F104Z500NT
CB59	Chip Capacitor	CC41-0603F104Z500NT
CB60	Chip Capacitor	CC41-0603F104Z500NT
CB61	Chip Capacitor	CC41-0603F104Z500NT
CB63	Chip Capacitor	CC41-0603F104Z500NT
CB64	Chip Capacitor	CC41-0603F104Z500NT
CB65	Chip Capacitor	CC41-0603F104Z500NT
CB66	Chip Capacitor	CC41-0603F104Z500NT
CB67	Chip Capacitor	CC41-0603F104Z500NT
CB68	Chip Capacitor	CC41-0603F104Z500NT
CB69	Chip Capacitor	CC41-0603F104Z500NT
CB70	Chip Capacitor	CC41-0603F104Z500NT
CB71	Chip Capacitor	CC41-0603F104Z500NT
CB72	Chip Capacitor	CC41-0603F104Z500NT
CB73	Chip Capacitor	CC41-0603F104Z500NT
CB74	Chip Capacitor	CC41-0603F104Z500NT
CB75	Chip Capacitor	CC41-0603F104Z500NT
CB76	Chip Capacitor	GRM39Y5V105Z10
CB77	Chip Capacitor	GRM39Y5V105Z10
CB78	Chip Capacitor	GRM39Y5V105Z10
CB80	Chip Capacitor	GRM39Y5V105Z10
CB81	Chip Capacitor	GRM39Y5V105Z10
CB92	Chip Capacitor	GRM39Y5V105Z10
CB106	Chip Capacitor	CL21F105ZANC
C98	Chip Capacitor	CL21F105ZANC
C137	Chip Capacitor	CL21F105ZANC
C13	Chip Capacitor	CL21F105ZANC
C14	Chip Capacitor	CL21F105ZANC
C15	Chip Resistor	RC-03K000JT
C16	Chip Resistor	RC-03K000JT
C69	Chip Resistor	RC-03K000JT
C70	Chip Resistor	RC-03K000JT
C32	Chip Resistor	RC-03K000JT
C38	Chip Resistor	RC-03K000JT

PARTS LIST (continued)

Position	Parts	Type
C87	Chip Resistor	RC-03K000JT
C88	Chip Resistor	RC-03K000JT
C107	Chip Resistor	RC-03K100JT
R14	Chip Resistor	RC-03K100JT
R35	Chip Resistor	RC-03K100JT
R44	Chip Resistor	RC-03K100JT
R87	Chip Resistor	RC-03K100JT
R98	Chip Resistor	RC-03K100JT
R103	Chip Resistor	RC-03K220JT
R105	Chip Resistor	RC-03K220JT
R111	Chip Resistor	RC-03K330JT
R22	Chip Resistor	RC-03K330JT
R27	Chip Resistor	RC-03K330JT
R40	Chip Resistor	RC-03K330JT
R41	Chip Resistor	RC-03K330JT
R42	Chip Resistor	RC-03K330JT
R125	Chip Resistor	RC-03K750JT
R11	Chip Resistor	RC-03K750JT
R12	Chip Resistor	RC-03K750JT
R47	Chip Resistor	RC-03K820JT
R48	Chip Resistor	RC-03K101JT
R53	Chip Resistor	RC-03K101JT
R84	Chip Resistor	RC-03K101JT
R85	Chip Resistor	RC-03K101JT
R86	Chip Resistor	RC-03K391JT
R108	Chip Resistor	RC-03K102JT
R114	Chip Resistor	RC-03K102JT
R118	Chip Resistor	RC-03K102JT
R56	Chip Resistor	RC-03K102JT
R68	Chip Resistor	RC-03K102JT
R73	Chip Resistor	RC-03K102JT
R107	Chip Resistor	RC-03K102JT
R109	Chip Resistor	RC-03K102JT
R31	Chip Resistor	RC-03K102JT
R39	Chip Resistor	RC-03K102JT
R51	Chip Resistor	RC-03K102JT
R52	Chip Resistor	RC-03K332JT
R79	Chip Resistor	RC-03K332JT
R81	Chip Resistor	RC-03K392FT
R82	Chip Resistor	RC-03K472JT
R93	Chip Resistor	RC-03K472JT
R94	Chip Resistor	RC-03K752JT
R104	Chip Resistor	RC-03K822JT

PARTS LIST (continued)

Position	Parts	Type
R140	Chip Resistor	RC-03K103JT
R141	Chip Resistor	RC-03K103JT
R67	Chip Resistor	RC-03K103JT
R72	Chip Resistor	RC-03K103JT
R62	Chip Resistor	RC-03K103JT
R80	Chip Resistor	RC-03K103JT
R83	Chip Resistor	RC-03K103JT
R57	Chip Resistor	RC-03K103JT
R28	Chip Resistor	RC-03K103JT
R1	Chip Resistor	RC-03K103JT
R2	Chip Resistor	RC-03K103JT
R3	Chip Resistor	RC-03K103JT
R4	Chip Resistor	RC-03K103JT
R6	Chip Resistor	RC-03K103JT
R7	Chip Resistor	RC-03K103JT
R23	Chip Resistor	RC-03K103JT
R33	Chip Resistor	RC-03K103JT
R36	Chip Resistor	RC-03K113JT
R43	Chip Resistor	RC-03K113JT
R55	Chip Resistor	RC-03K153JT
R59	Chip Resistor	RC-03K183JT
R65	Chip Resistor	RC-03K183JT
R69	Chip Resistor	RC-03K183JT
R78	Chip Resistor	RC-03K183JT
R96	Chip Resistor	RC-03K203JT
R145	Chip Resistor	RC-03K203JT
R66	Chip Resistor	RC-03K203JT
R71	Chip Resistor	RC-03K203JT
R37	Chip Resistor	RC-03K203JT
R16	Chip Resistor	RC-03K223JT
R34	Chip Resistor	RC-03K273JT
R64	Chip Resistor	RC-03K333JT
R70	Chip Resistor	RC-03K393JT
R24	Chip Resistor	RC-03K104JT
R25	Chip Resistor	RC-03K104JT
R26	Chip Resistor	RC-03K104JT
R29	Chip Resistor	RC-03K104JT
R32	Chip Resistor	RC-03K274JT
R58	Chip Resistor	RC-03K274JT
R9	Chip Resistor	RC-03K754JT
R21	Chip Resistor	RC-05K000JT
R50	Chip Resistor	RC-05K000JT
R5	Chip Resistor	RC-05K000JT

PARTS LIST (continued)

Position	Parts	Type
R8	Chip Resistor	RC-05K000JT
R10	Chip Resistor	RC-05K000JT
R13	Chip Resistor	RC-05K000JT
R74	Chip Resistor	RC-05K010JT
R76	Chip Resistor	RC-05K010JT
R30	Chip Resistor	RC-05K010JT
FB4	Chip Resistor	RC-05K010JT
FB5	Chip Resistor	RC-05K101JT
FB6	Chip Resistor	RC-05K201JT
R38	Chip Resistor	RC-05K201JT
R49	Resistor	RT14-0.25W-470ΩJ
R61	Chip ROW Resistor	RCML08W330JT
R17	Chip Inductor	SGMI2012M1R8KT
R18	Chip Inductor	SGMI2012M1R8KT
R19	Chip Inductor	SGMI2012M1R8KT
R20	Chip Inductor	SGMI2012M3R3KT
R95	Chip Bead	CBG3216U102T
R136	Chip Bead	CBG2012U102T
R137	Chip Bead	CBG2012U102T
R54	Transistor	3G8050C
RN1	Transistor	3G8050C
L16	Transistor	3CG8550C
L17	Transistor	3CG8550C
L18	Transistor	3CG8550C
L22	Transistor	3CG8550C
L5	Chip Diode	RLS4148E
FB7	Chip Diode	RLS4148E
FB8	Chip Diode	RLS4148E
Q13	Chip Diode	RLS4148E
Q14	Chip Diode	RLS4148E
Q4	Chip Diode	RLS4148E
Q5	Chip Diode	RLS4148E
Q11	Chip Diode	RLS4148E
Q12	Chip Transistor	MMBT3904
D1	Chip Transistor	MMBT3904
D3	Chip Transistor	MMBT3904
D5	Chip Transistor	MMBT3904
D7	Chip Transistor	MMBT3904
D9	Chip Transistor	MMBT3904
D11	Chip Transistor	MMBT3906
D13	Chip Transistor	MMBT3906
D16	Chip Transistor	MMBT3906
Q1	Transistor	2SK3018

PARTS LIST (continued)

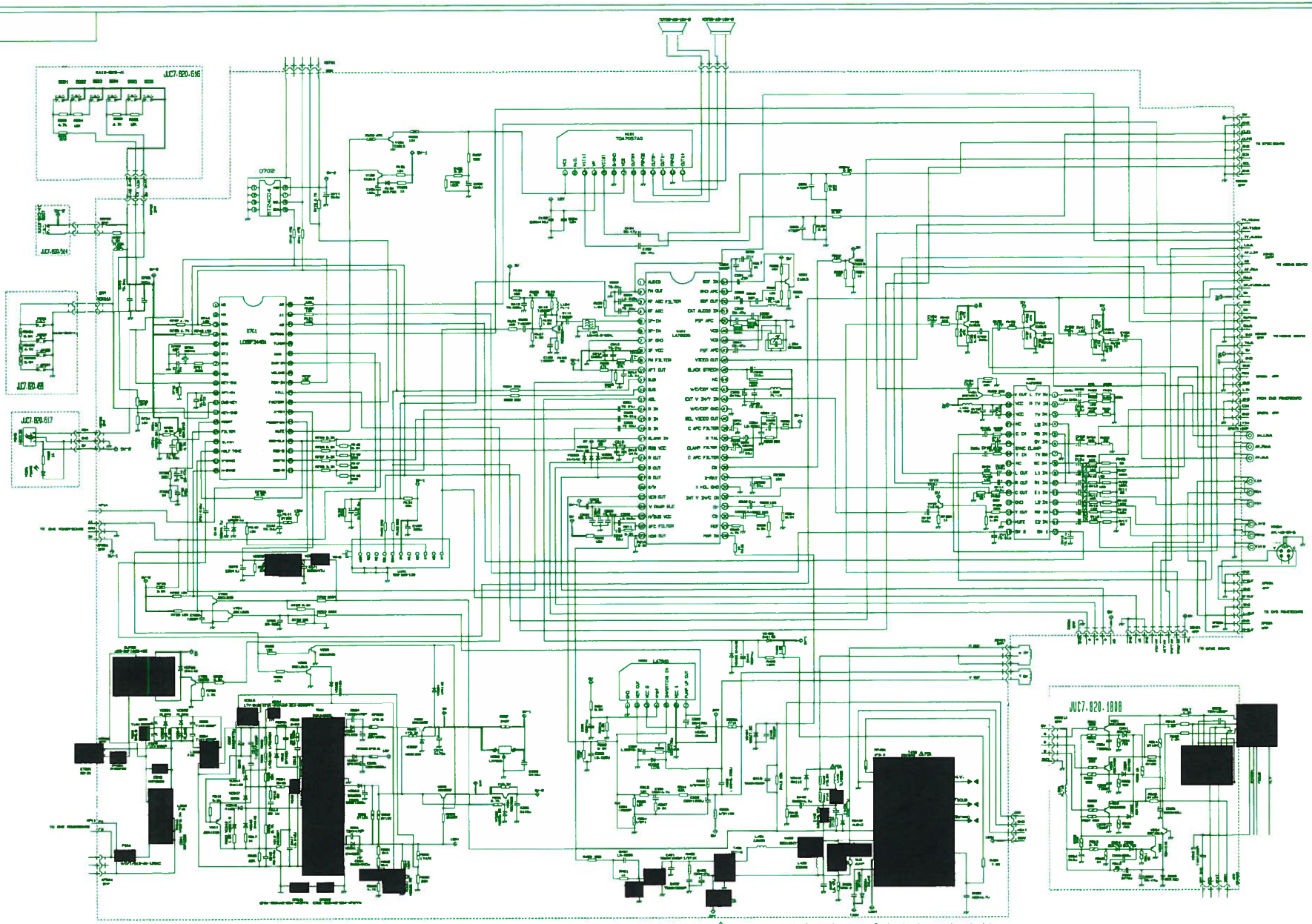
Position	Parts	Type
Q6	Transistor	2SK3018
Q9	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q10	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q15	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q17	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q7	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q8	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q24	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q2	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
Q3	Aluminum Electrolytic Capacitor	CD110X-16V-10uFM
C10	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C11	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C35	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C50	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C58	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C75	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C76	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C80	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C81	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C12	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C17	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C18	Aluminum Electrolytic Capacitor	CD110X-16V-47uFM
C19	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C20	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C24	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C25	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C36	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C45	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C55	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C56	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C57	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C1	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C3	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C59	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C60	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C62	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C63	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C64	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C65	Aluminum Electrolytic Capacitor	CD110X-16V-100uFM
C66	Aluminum Electrolytic Capacitor	CD110X-16V-220uFM
C67	Aluminum Electrolytic Capacitor	CD110X-16V-220uFM
C68	Aluminum Electrolytic Capacitor	CD110X-16V-220uFM
C71	Inductor	LGA0307-33uHK

PARTS LIST (continued)

Position	Parts	Type
C72	Inductor	LGA0307-33uHK
C73	Inductor	LGA0307-33uHK
C83	Inductor	LGA0307-33uHK
C84	Inductor	LGA0307-33uHK
C136	Inductor	L-100
C78	Inductor	L-100
C97	Inductor	L-100
C99	Inductor	L-100
L2	Diode	W05Z5.1A
L3	Crystal OSC	JA18A-27MHZ
L4	Connector	PH-9A
L10	Connector	PH-5A
L11	Connector	PH-4A
L6	FPC	52437-2491
L7	IC	NJM4558M
L8	IC	L78L05ACZ
L14	IC	AMS1117M-3.3V
D15	IC	NCP1117ST25T3
Y1	IC	SN74HCU04
XS1	IC	GM72V161621ET8
XS2	IC	GM72V161621ET8
XS3	IC	24WC02J
CN1	IC	AT49F8192AT-70RC
U9	IC	CS4340-KS
U15	IC	CS4955-CQ
U11	IC	MT1336E
U12	IC	MT1369AE
U5	IC	BA5954FP
U16		
U17		
U10		
U7		
U13		
U14		
U1		
U3		
U2		

Notice:

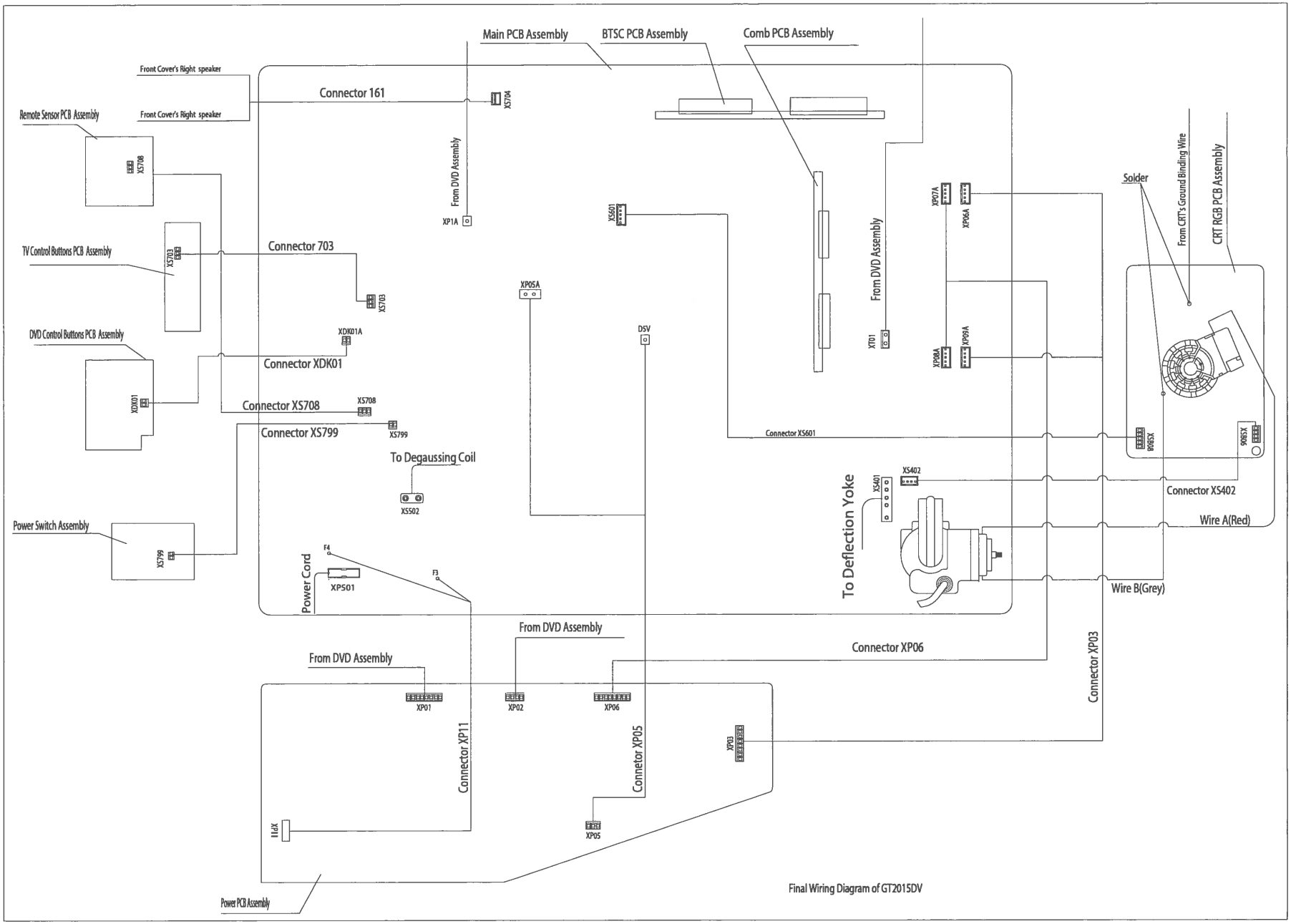
⚠FDA This symbol tells you that replacement components related to high voltage, beam current and X-ray radiation should not be made at will.

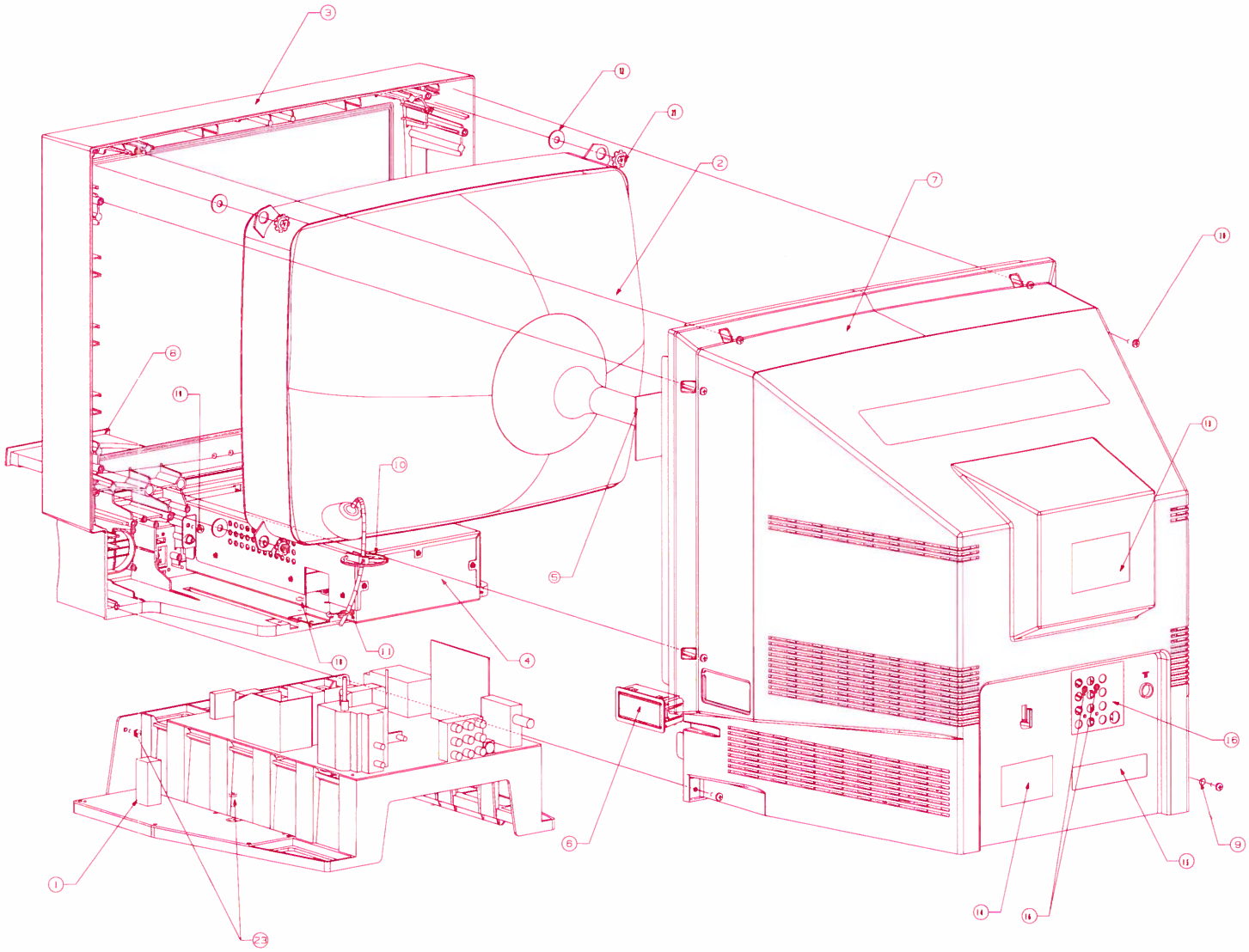


This circuit diagram is only for reference.
Specifications are subject to change without notice.

1. Any components identified by ⚠ have special safety-related characteristics. Use replacement components which have the same characteristics as the original parts.
2. ⏚ Cold ground ⊥ Hot ground
3. ⚠ FDA This symbol tells you that replacement components related to high voltage, beam current and X-ray radiation should not be made at will.

DESIGNER		CIRCUIT DIAGRAM OF GT2015DV	
DATE			
MANAGER			
DATE			The 1 page Total 3 page


Main PCB Assembly
BTSC PCB Assembly
Comb PCB Assembly
Front Cover's Right speaker
Front Cover's Right speaker
Connector 161
XS704
Remote Sensor PCB Assembly
XS708
From DVD Assembly
XP1A
XS601
From DVD Assembly
XP07A
XP06A
Solder
From CRT's Ground Binding Wire
CRT RGB PCB Assembly
TV Control Buttons PCB Assembly
XS703
Connector 703
XS703
XP05A
DVD Control Buttons PCB Assembly
XDK01A
Connector XDK01
XDK01
D5V
XT01
XP08A
XP09A
Connector XS708
XS708
Connector XS799
XS799
Connector XS601
XS806
XS805
To Degaussing Coil
XS502
XS402
XS401
To Deflection Yoke
Connector XS402
Wire A(Red)
Power Switch Assembly
XS799
F4
F3
Power Cord
XPS01
Wire B(Grey)
From DVD Assembly
Connector XP06
From DVD Assembly
Connector XP03
XP01
XP02
XP06
Connector XP11
Connetor XP05
XP03
XP11
XP05
Power PCB Assembly
Final Wiring Diagram of GT2015DV



Final Assembly Diagram of GT2015DV

Item No.	Parts	Qty	Remarks
21	Specific tapping screw M4x12L	4	
20	Tapping screw 4.2X38AHD	8	
19	Tapping screw 4X14MTHCk	6	
18	Tapping screw 4x12MTHCk	2	
17	Tapping screw 3x13WmAbO	2	
16	AV bible	1	
15	DVD bible	1	
14	C-UL bible	1	
13	Rear bible	1	
12	Washer	4	
11	Wire clip	1	
10	Distance clip	1	
9	Seal cap	1	
8	DVD door	1	
7	Back cover	1	
6	Handle	1	
5	CRT RGB PCB assembly	1	
4	DVD assembly	1	
3	Front cover assembly	1	
2	CRT assembly	1	
1	Chassis	1	

APEX DIGITAL TELEVISION In-Warranty Schedule by Model

Product Model No.	LIMITED WARRANTY [1]				Carry-In Service	In Home	Stock Repair	REIMBURSEMENT RATES				
	Parts	Remote Control	Labor	CRT [3]	Yes/No	Yes/No	Yes/No	Carry-In		Home Service		Stock
								Minor	Major	Minor	Major	Repair
13 inch [2]												
AT1302	90	90	90	90	N	N	N	N/A	N/A	N/A	N/A	N/A
AT1308	90	90	90	90	N	N	N	N/A	N/A	N/A	N/A	N/A
20 inch [2]												
AT2002 / AT2002S	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
AT2008 / AT2008S	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
GT2011J	365	90	90		N	N	N	N/A	N/A	N/A	N/A	N/A
GT2011S	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
GT2015	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
GT2015DV	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
KT2006	1 YEAR STORE REPLACEMENT											
24 inch [2&3]												
AT2402	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
AT2408 / AT2408S	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
GT2411S	365	90	90	365								
GT2415	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
PF2425	365	90	90	730	N	N	N	N/A	N/A	N/A	N/A	N/A
KT2406	365	90	90	365	Y	N	N	[4]	[4]	[4]	[4]	[4]
25 inch [2]												
AT2502	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
AT2502S	365	90	90	365	N	N	N	N/A	N/A	N/A	N/A	N/A
27 inch [3]												
AT2702	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
AT2702S	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
AT2708 / AT2708S	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GT2711S	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GT2715	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
PF2725	365	90	90	730	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GT2715DV	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
32 inch [3]												
AT3208S	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GT3215	365	90	90	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
PF3225	365	90	90	730	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
KT3226	365	90	90	730	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
PROJECTION												
GB4308	365	90	365	730	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GB43HD09	365	90	365	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GB5108	365	90	365	730	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GB51HD09	365	90	365	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GB55HD09W	365	90	365	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]
GB65HD09W	365	90	365	365	Y	Y	Y	[4]	[4]	[4]	[4]	[4]

[1] Limited Warranty is printed on the last page of the owner's manual

2 All defective units 13" - 25 "during the first 90 days of ownership will be exchanged at the original place of purchase. Dealer may contact APEX to receive a Return Authorization from Apex for credit or exchange.

3 Should the picture tube fail during the In-Warranty period the product will be exchanged. The customer is responsible for the Service Center diagnostic fee after the initial labor warranty period and for all packing, transportation and insurance charges.

4 See Master Dealer File for Rates for each Dealer

NOTE: All handling, packing, shipping or freight charges are the responsibility of the customer.

Group component lists of GT2015DV

Part name	CRT Type	Old Part number	New Part	List
Remote control		KDT1A-C1	8201801081L	$15.00
CRT assembly	For Samsung CRT	A51QDX992X001	8537000870C01	$120.00
CRT assembly	For Daewoo CRT	A51QDK090X011	8537000870C02	$120.00
CRT assembly	For BMCC CRT	A51LXR195X91J	8537000870C03	$120.00
Front cover assembly			8611605500C	$16.92
Speaker			56281310080	$8.00
Power Cord			5341101D210	$4.00
Keys assembly (for TV)			8611700570C	$16.92
Control PCB assembly		JUC7.820.510	8667207160C01	$35.58
BTSC PCB assembly		JUC7.820.424	8667207210C	$17.79
NCOMB PCB assembly		JUC7.820.423	8667207220C	$17.79
Power switch PCB assembly		JUC7.820.514	8667207280C	$17.79
DVD-Control PCB assembly		JUC7.820.499	8667208140C	$17.79
Main PCB assembly	For Samsung CRT	JUC7.820.614	8667208720C01	$130.00
Main PCB assembly	For Daewoo CRT	JUC7.820.614	8667208720C02	$130.00
Main PCB assembly	For BMCC CRT	JUC7.820.614	8667208720C03	$130.00
Power PCB assembly	For DVD127 only	For DVD127 only	8667208730C01	$35.58
Powet PCB assembly	For DVD128/129 only	For DVD128/129 only	8667208730C02	$35.58
Remote sensor PCB assembly		JUC7.820.511	8667208740C	$35.58
CRT RGB PCB assembly	For Samsung CRT		8667209270C01	$69.45
CRT RGB PCB assembly	For Daewoo CRT		8667209270C02	$69.45
CRT RGB PCB assembly	For BMCC CRT		8667209270C03	$69.45
Back cover			8807401980C	$16.92
DVD127		DVS loader Assembly + ES6008 mpeg board	DVD127	$65.00
DVD127 Door Compartment			8808200280C	$10.00
DVD128/128		Shinwa DVD MECHA DM538B+MT1369 SERVO/MPEG BOARD	DVD128/128	$65.00
DVD128/129 Door Compartment			8808200380C	$10.00